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"Twilight sleep" has now been tried on many hundred cases and we ought to be able to sum up its advantages and disadvantages. Nevertheless, equally able experts have expressed such irreconcilable conclusions from their own experiences, that the vast majority of the profession seem to be withholding judgment. Scopolamine is undoubtedly an uncertain and dangerous drug and some people have an exaggerated susceptibility to doses having little or no effect on others. The treatment therefore cannot be standardized. Each case is a law to itself, requiring the doctor to be present or within instant reach during the whole course of the labor. This largely prohibits the method in the home, for no physician would dare to neglect other patients who have depended on him and who would be seriously depressed if turned over at the last moment to an assistant or an utter stranger. No woman could rely on the doctor she engaged unless she had arranged to go to the hospital, and but a small percentage can afford that. There have been accidents charged to improper methods and dosages, but we have reason to believe that serious results have followed a strict compliance with the published technic. Berlin is said to hate Freiburg and for that reason condemns "Twilight sleep," but this

imputes a lack of honor to Prussian physicians that we are very loath to believe. To be sure, we do know that a few German doctors of high standing have, for a consideration, given testimonials to certain proprietary articles but have stipulated that the letters must not be used in Germany. It is well known that Krönig and Gauss were greatly opposed to the publication in the lay press of the article which first directed popular attention to their work, but we now hear them likened to the lady who "saying she ne'er would consent, consented." As a fact there was no objection to this publication, as it was news, and big news too. Nearly all of us get our first knowledge of important medical discoveries from the lay press, because no doctor can possibly keep in touch with every medical field. The only result will be a quicker determination of the exact field of usefulness of this new form of anesthesia, or semi-anesthesia as perhaps, it may be more properly described.

The objections to "Twilight sleep" seem to be creating an opinion that it does not possess sufficient advantages over the accepted way of administering chloroform, to warrant the risk of nervous damage to the mother, asphyxiation of the child, prolongation of labor and severe hemorrhage. The

main objection seems to be the impossibility of stopping the action of the drug should it act badly. Chloroform is administered in such small amounts that its action is evanescent. We do not yet know why the uterine contractions should be accompanied by pain. Not a few capable men are convinced that labor pains serve a physiological end. Some of our best obstetricians refuse to ease up the suffering unless it is evidently pathological. Hysterical and nervous women give an exaggerated idea of their agony, while normal women quite generally say that their suffering was nothing to what they had been led to expect. Except in the diseased, the pains have no discoverable bad result. When they cease, the woman seems to be in a perfectly normal state. If we could be sure they serve no purpose, we would try to stop them in every case but unfortunately we have no drug which will do this without incidentally weakening the muscular contractions and prolonging labor,—sometimes fatally, not to mention the hemorrhages from a relaxed uterus. The profession has been so shocked by the quackery of a few European health resorts that it accepts new things from abroad with considerable reservation. We must investigate for ourselves. The slowness to take up "Twilight sleep" gave rise to denunciation of our proverbial opposition to the new, but in this case at least it was our only course. The excellent articles published in this issue show that we have not yet sufficient evidence for anything like unanimity of opinion, and we must leave the question open awhile longer. The only thing settled seems to be that it is more useful in first labors in hospitals. Normal multiparae whose previous labors have been short will probably go on having babies the way they have done for a million years or so,—a way which has

survived as the fittest in spite of its suffering which strange to say some of them forget afterwards almost as completely as after scopolamine. In the meantime it is desirable that competent men continue to study this method critically, in order to determine its real value in the management of labor, its proper technic, the drugs to use, its contraindications, and finally the best means of controlling or counteracting any untoward effect that may arise in the course of its administration; in other words, to establish its limitations no less definitely than its indications and effects.

National defense is perhaps the leading question to-day, and no profession is more vitally interested than the medical for none must contribute more of its personnel to the military forces. There are no differences of opinion as to the necessity for us to be prepared to repel invasion, but the kind and amount of preparedness are the points in dispute. Even the extreme pacifists who argue that armaments ought to disappear and will disappear in time, seem to be unanimously of opinion that for the present we must be able to defend ourselves. All nations depend upon a citizenry trained and accustomed to arms, and that fact is accepted in this country. We must now determine, how many citizens should be trained and how long? The English speaking nations have never made any efforts in this direction in times of peace, and have trained only the few who volunteer for service in the small army and navy. The Swiss go to the opposite extreme and train everyone a certain number of hours or days each year but permit them to go about their civil employments in the meantime. The rest of

the Continental nations adopted a half way measure. They train only those needed to keep the regular army up to a certain strength which varies according to the supposed need of having a force for instant use—about one percent of the population more or less being kept under arms. It takes a long time to recruit an army and equip it. The Russians required eighteen months to get ready to fight the Japanese, who won out by preparedness. The war ended because of domestic disturbances in Europe just when the Manchurian army was ready to fight. Whether or not we should be furnished with a large army for instant use need not be discussed because the people think they do not need it and they will not have it, though they all confess that we might have a bigger one than at present. The only thing left is an extensive training of civilians to constitute a reserve from which to recruit an army needing little training. Arms and ammunition must be made in advance but no one seems to know to what amount. The wear and tear on clothing is so great in war as to necessitate a new outfit every month or two, so that the means of making it must be improvised anyhow and the lack of the initial supply is not so serious as the lack of trained men and arms. The whole matter boils down to a question of training, and nothing can be done until public opinion demands it. A large percentage of our population is foreign born and so glad to escape the necessity for training that they will not consent to it until dire need forces them. The problem before us then, is far more complicated than usually admitted. For the present we must depend upon patriotic volunteers, but there is no objection to making military drill a part of the public school curriculum. As a calisthenic and hygienic measure it will serve

an excellent purpose. Target shooting would be hailed with joy by every normal boy and would add to the zest for school. As a public health measure the profession can safely advocate the innovation without treading on the toes of the extremists who want peace at any price—even the price of liberty. Germans and Frenchmen have repeatedly asserted that their armies had given back to the soldier far more than he had contributed to national defense. As hygienists, we should rejoice at the prospect of developing our youth morally, mentally and physically by military training.

The cancer problem has been discussed in a monumental work of that title by Dr. Wm. Seaman Bainbridge of New York and just published by Macmillan Co. It is about as complete a review of the whole situation as exists in our literature and will probably be the main work of reference for many a year. The facts as to cancer are scattered in many works and periodicals and we have long needed a treatise which would give a brief description and summary of each phase of the subject. This has been accomplished by Bainbridge in an admirably judicial tone, quoting the exact words of various advocates of this or that idea, so that the reader gets the facts and opinions really at first hand. Evidently the author has studied the literature of cancer with great care and taken infinite pains to separate "the wheat from the chaff." The book, however, is very far from being a mere compilation and it gives a wealth of material and conclusions that well reflect the original researches Dr. Bainbridge has been pursuing for many years. For instance, he cannot find any evidence that the

death rate is increasing, that there is any risk of infection, or that there is such a thing as "cancer-houses." All old theories as to the causation are considered insufficient, and a satisfactory working explanation is yet to be discovered. The only sure predisposing cause is irritation of some sort, acting particularly on benign neoplasms. The trend of investigation points to a number of exciting causes, and perhaps carcinoma and sarcoma will be separated into distinct diseases. Prophylaxis is largely a matter of removing all sources of chronic irritation. Considerable attention is paid to the current crusade against cancer and Dr. Bainbridge very rightfully counsels the avoidance of hysteria in promoting this praiseworthy campaign and urges the exercise of common sense and conservatism. A progressing accuracy of diagnosis is leading a larger percentage to the only sure cure—a complete surgical removal of the cancer cells in the early stages when there is but one localized focus. Though he thinks that surgery is the only warrant for the statement that we are "travelling hopefully," yet the facts he presents hold much to cheer us. The death rate is appalling no doubt, but the number who are saved by early diagnosis and prompt, thorough operation is a cause for congratulation. Therefore throughout this splendid work, the most important and comprehensive contribution to the study of cancer thus far published, there is a spirit of optimism that is rich with promise for the near future, and justifies the expectation that it cannot be long before some one will be able to piece the puzzle together and picture the cause of this riotous cellular outlawry. Medical men are greatly indebted to Dr. Bainbridge, not alone for a great and useful book, but also for the in-

spiration he has given to every student of this "riddle of the ages."

Smallpox on the Ohio in December, 1913, was the cause of much joy among antivaccinationists who held up these few cases as proof that vaccination does not protect anyone though it certainly protected all the rest of the crew. The facts now published in the Surgeon General's *Annual Report* and the October *Bulletin* by Past Assistant Surgeon T. W. Raison, completely turn the tables. None of the eleven severe cases had ever been successfully vaccinated. The other fourteen were so mild that some of them would not have been recognized as smallpox had there not been an epidemic, and each of them had a scar as evidence of protection sufficient to prevent a severe form. It has been proved thousands of times that the immunity wears out, especially if there is but one scar, but that one successful revaccination some years later is effective for life. Even when immunity fades it never completely disappears so that a severe smallpox in the vaccinated is one of the rarest things in medicine. Moreover some protection lasts even if we are able to produce a second or mild vaccinia. The more insertions made at the primary vaccination the longer is the immunity to both vaccinia and smallpox—three or more scars are generally protective for life. Sailors have a childish trick of removing the virus, as shown in the epidemic in the Pacific squadron a few years ago and they probably did so in this case. In each instance several lost their lives for their stupidity. By keeping up the illogical crusade, the antivaccinationists are morally responsible for these deaths. The Surgeon General says that contemplated changes in the regulations will make the ship's surgeon respon-

sible that every member of the crew has a pitted scar as evidence of vaccinia. It has been repeatedly proved that no one is immune to vaccination. If an unprotected sailor is vaccinated every month with fresh potent lymph, he soon tires of rubbing it off. On the other hand let us repeat the warning that the profession as a rule is partly responsible for some of the opposition, for we perform an enormous number of useless vaccinations on persons whose scars are evidence of perfect protection.

The value of periodical examinations has been realized a long time. Important personages the world over have always had physicians at hand to warn them of possible dangers. The Chinese made a custom of hiring a physician to keep them well, and his pay stopped as long as they were ill. The poor man had to run the risk and thus the practice grew up of ignoring the doctor until we got sick. The science of preventive medicine has so conclusively shown its usefulness, that people are all asking why get sick if it can be prevented? We are, therefore, witnessing a great social revolution in compliance with a growing public demand. This modern movement is to give everyone, rich or poor, an opportunity to profit by the diagnostic advances of modern medicine, so that he may know of incipient disease and check it. We have long urged life insurance companies as a matter of business to induce policy holders to present themselves annually for examination so that they may be sent to the family physician if something suspicious is found. By lengthening life, insurance is cheapened. It is no longer a sign of hypochondriasis to ask a physician periodically to overhaul us, and no one is ashamed of it. The habit is now classed with the precautions against

fire or accident. It is a social necessity, for we can prevent the disablement of many a wage earner and thus lessen public burdens. The first step has been taken by Commissioner Goldwater of the Health Department of New York City in the compulsory examination of all employees, and in the attempts to popularize the habit as described in our last issue. The poor cannot afford to hire a doctor so it must be done by public physicians—another instance of the gradual approach of social medical service under fixed salaries. We can already see the end of the old system of expecting a doctor to give his services free,—a thing not expected of anyone else on earth, not even of the clergy. We are tempted to make these remarks because the founder of AMERICAN MEDICINE, Dr. Geo. M. Gould, was the first to urge the present movement in an address at a meeting of the American Medical Association (*J. A. M. A.*, July 21, 1900). It contains many valuable suggestions as to the collection and utilization of data by family physicians, but the main point is the preservation of health. The idea was instantly accepted—and the profession promptly forgot the author. It was “in the air,” and later many believed that they had independently conceived the idea. Thus at present there are numerous claimants for priority who all unquestionably owe the idea to Gould’s original communication, but do not know it.

The medical side of the metric controversy deserves discussion now that there seems to be a renewal of the attempt to force the system on the people by law. Physicians have been thoroughly drilled in the measures for the last thirty years and yet but a very small percentage use them in practical work with the sick. We have been

informed that the great majority of pharmacists find the old system much more practical in compounding prescriptions. It has been said that immigrants from countries where the metric measures have been the only legal ones for generations, know little about them, because in their daily life they have continued to use the old measures devised by their ancestors ages ago, perhaps before the invention of letters or even before the first pictographs. The French measures are legal here, but have failed to establish themselves except in the laboratory where they are now indispensable. They seem to be unsuitable elsewhere from their artificiality. Most of us think in grains and must translate into grammes while we have heard of pharmacists who translate grammes back to grains to be sure the doctor has not made a mistake in translation. If the metric is dangerous why not discourage it? To force us to use an unfit system would be as tyrannous as to force the laboratory workers to abandon the metric. Manufacturers have said that the common measures suit them the best, though they also assert that the cost of changing their machinery is prohibitive even if the metric were the best. When Germany and France adopted them, there was no machinery to change, and their industries may now forbid any change to the English. Still if there was money in it, we would find manufacturers adopting the metric here, just as some French have used the English to fill foreign orders.

The objections to the metric system have been repeatedly described in scientific literature. It has been alleged that it is unnatural and unscientific because the vast majority of people use mental arithmetic only and must have measures which are easily halved and quartered or divided into

thirds like a dozen. Few, if any, of us can think of tenths and do not attempt it in our mental arithmetic. For this reason metric measures are halved or quartered in European countries. We divided our dollar into halves and quarters and our dime into nickels, and now find ourselves bothered by fractions in further subdivisions. This never occurs in English money. It is a pity we did not have four digits instead of five for we would then have a system based on eight or a "score" of sixteen, which many mathematicians think ideally scientific. Then again our measures of length, surface and capacity had their origin in things in common use, such as cups, buckets, foot and arm's length. A large measure was almost always made by taking two, three or four of the smaller, or perhaps a dozen of them. No artificial measures have replaced them, because each is approximately the measure of some practical need. The grain and fluid ounce are said to be more useful than the gramme or cubic centimeter. It is also easier to remember and visualize small numbers of common units than the huge odd numbers of the smaller French ones. Our roads are a mile apart and farms are 160 acres, so we will always use these measures. The acre itself is a very convenient measure for small lots. In spite of all this Prof. A. F. Gilman of Ripon College (*Science*, July 25, 1913) approves the statement that our system is a "wickedly brain destroying piece of bondage," whereas the metric is rejected because of this very fault. To charge our measures with responsibility for false measure frauds ignores similar frauds in France. Our measures are adhered to because they are simple, sensible, easily operated and the best ever devised, but Gilman says the metric have these qualities. So it has in the

laboratory but not with the uneducated. We are much afraid it may be necessary to carry on a campaign of education among professors to teach them how our measures arose and why the people adhere to them in spite of all academic attempts to force them to use the difficult metric ones. It is not the effect of custom, because people always adopt what proves to be best. Our medical schools in particular should not advocate the impractical, be it ever so "scientific" in the laboratory. The new British Pharmacopeia which has recently gone into effect, uses the metric system exclusively, and it will be interesting to learn how it will affect prescription writing.

The Philadelphia Post-Graduate School of Neurology has been organized and is now in active operation. It seems to be the first institution of the kind which AMERICAN MEDICINE has been advocating for many years, and we take keen pleasure in calling attention to it. The field of medicine has become so enormous, that we cannot teach our students much more than the fundamentals even if we keep them in school ten years. To be safe practitioners we are compelled to specialize, for it takes all our time and energy to become expert in a tiny sphere. Even the family physician, in spite of his general survey of the whole field, really specializes as much as the rest of us. That is, everyone is compelled to neglect some fields to be expert in others. The old way of becoming expert was very wasteful of time and labor and money. Nor is it at all necessary for a man to devote twenty years to general practice in medicine or surgery before he dares to limit his field. The modern trend is to begin the special training

sooner, and as a fact the cleavage between medicine and surgery often starts in the post-graduate hospital service. In Europe it is still earlier. Men generally discover their own capacity rather early, and are only injured if they must wait a long time to branch out. The need of special schools has therefore been known a long time and we are witnessing the first steps in the disintegration of the post-graduate schools which were our first attempts to fill the need. One who wishes to confine himself to neurology can surely be better trained by eight teachers in a special school, than by one "professor" in a post-graduate institution. We are sorry to see the announcement that the school is to cater to those who are barred by the war from the European clinics. The names on the faculty list show that it obviates the necessity of going abroad. American neurologists are just as good teachers as European—perhaps better. Now let us have a post-graduate school of surgery.

The successful use of emetine in pyorrhea alveolaris reveals an unexpected power of this wonderful substance. According to the *Dental Cosmos* of Aug., 1914, p. 948, Dr. M. T. Barrett of the Dental Department of the University of Pennsylvania, and Dr. Allen J. Smith, Professor of Pathology, have succeeded in demonstrating *amebae coli* in certain cases which defied ordinary treatment, and curing the disease with local injections of emetine. Vaccine treatment has not always lived up to its early promise and more than one observer has thought the failures due to the fact that a protozoan and not a bacterium was the cause of the disease. Whether or not the surmise is correct, the cases have required

prolonged local surgical measures and germicides, but have yielded very promptly to emetine. It is quite likely that there are other infective agents besides *amebae coli* and that emetine is lethal to these. If *amebae coli* are the causes, it may be possible to cure the cases by the hypodermic administration of emetine. The reports so far are so extremely favorable that we are justified in predicting a decided advance in public health through the prompt cure of oral infections which are blamed for an enormous amount of chronic invalidism now due to the absorption of buccal toxins and also due to secondary infection of the whole alimentary tract. The uses of emetine are becoming so numerous that the wonder grows it was not discovered sooner. Still more amazing were the accurate observations of our medical ancestors who had been using the crude drug, with truly scientific empiricism. The time has now come in which we must adopt a more humble attitude towards the therapy of the last century, instead of the flippant contempt which was part and parcel of the therapeutic nihilism we all more or less approved after the discovery of the living causes of infections. The old results in the case of ipecac were not *post hoc* but really *propter hoc*, and perhaps many other drugs acted similarly though we have discarded them. The text books of a century ago have thus suddenly become of practical value instead of purely historical. They are really gold mines and it is our duty to extract the gold from the enormous amount of impurities which conceal it. Even primitive men, who generally reasoned that sequences were always results, often struck the truth by accident—otherwise civilization could not have arisen. Empirical medicine similarly

must contain many a gem, such as quinine and emetine. Let us hunt them from old text books.

Ipecac as a tooth wash was suggested by Dr. C. C. Bass of New Orleans in a lecture on pyorrhea alveolaris (*Science*, Dec. 4, 1914). He states that the cause of this disease is not the *amebae coli* as stated by Smith of the University of Pennsylvania, but a separate and distinct species which he calls *amebae buccalis*. But as emetine is equally deadly to both, we need not worry over the identification of the parasites. It is sufficient to know that some kind of an ameba is the organism which makes its home in the tooth sockets eventually destroying the peridental membrane, and that it can be killed by an amount of emetine which is harmless to the body cells. Mild and early cases are cured, but we see no reason why the disease cannot be checked in all. As a preventive of this almost universal disease, Bass states that it would be rational to put a drop or two of fluid extract of ipecac on the tooth brush every time we use it—perhaps at the end of the mouth toilet when there is nothing to prevent the drug reaching the edges of the sockets. When the disease is present, this should certainly be a routine. The drug should also be in every tooth wash prescribed for other ends. The suggestion is a good one for every physician to take up, now that we have traced so much invalidism to an ultimate source in long existing small pus foci in the mouth. Whether physicians can cure pyorrhea by hypodermics of emetine, remains to be seen. At present we had better let the dentists manage such cases.

The small medical schools are filling a social need and will probably exist as long as there is a demand for them—and that may be permanently. They are not turning out highly skilled specialists nor is that their purpose. They are training self-reliant men to work in isolated country districts. To be sure, this kind of practice is itself a specialty for it requires knowledge and skill in methods wholly unnecessary in the city where we can get professional help in a minute or two. We hear rumors that the large medical schools are adopting a policy which has as its object the increase of their own student body by driving the small schools out of existence. If this policy does exist, it had better be abandoned at once. We are learning of the failure in practice of graduates of the big institutions and there is a suspicion that they have been given too much theory and too little training in the practical work they are to follow. We even hear some doubt expressed as to whether full time professors who never enter a private house except rarely as consultants, are competent to tell a man how to succeed in private practice where one has not the help of a big hospital staff of specialists and laboratory assistants. The old style school had practitioners to teach practice, and they also knew how much of the basic studies we needed. Would it not be well to go a bit slow in the development of big schools in which the successful practitioners are less and less in evidence and the laboratories waste so much time? We are also reading more and more complaint of the difficulty of country communities to obtain doctors, and the blame is being laid on the big schools which are placing such a glamor over city practice that few students are willing to bury themselves in the country.

The remuneration of country practice is said to be too small to warrant the expense of a course in the big cities, but if there is a small local school the surrounding country is well supplied by young, enthusiastic, successful practitioners. Although a small school is designed to train practitioners only, it must not be imagined for a minute that its graduates are not scientific. Indeed their qualifications and success are inducing many a doctor to advise students to seek the small schools. Limited clinical facilities may be a blessing, because the student is induced to investigate each case more thoroughly. He who has so many cases to see that he sees none, is cursed by a big clinic. If examining boards are to refuse recognition to a graduate because his hospital had only 100 beds instead of 300, they are quite likely to hear from an outraged public and profession.

The Current Issue.—We feel we may be pardonably proud of the splendid series of articles in this issue on the latter day use of morphine and scopolamine in the management of labor. The character of the men contributing these papers endows them with especial importance and this whole issue will doubtless stand for sometime as the most complete and authoritative exposition of the subject of "Twilight sleep." There is, to be sure, a certain amount of duplication in these interesting articles, but in view of the men who have thus recorded their opinions, this will add to rather than lessen the value of the whole series. The note of conservatism evident throughout is especially gratifying since it not only gives dignity and strength to the views expressed, but assures an early determination of the part "Twilight sleep" is to play in future obstetrical practice.



MEN AND THINGS



A True American Gentleman.—For so many years George Merrell rendered conspicuous service to the medical men of the country, that it is eminently fitting that his death on Dec. 12, 1914, should receive



more than passing notice. Then again it has become so much the fashion to look on those associated with the pharmaceutical industry as men of irresistible depravity and confirmed men-

dacity that it is a genuine pleasure to pause for a moment and pay a deserved tribute to one so long connected with this abandoned (sic) calling whose life and every act have been so clean and far above suspicion. George Merrell was not a physician but few men have ever been more earnestly devoted to medical progress. Through his ideals and exceptional capacity for business he was able to build up the business started by his father, Dr. Wm. S. Merrell, and by the preparation of drugs and remedies of the highest quality and reliability has for many years strengthened the hands of countless medical men in their conflict with disease. Honor and integrity have characterized the undertakings of the great business directed by this man and the name of Merrell attached to a product has been all that was necessary to establish its quality. Any other condition would have been intolerable to George Merrell. Never did a man show the stuff he was made of more plainly than did Mr. Merrell at the time of the recent panic. When his enormous business was jeopardized by conditions outside of its management, unavoidable conditions which many weaker men found overpowering, he did not choose the easy course and allow the situation to wreck him. Instead of

meekly submitting, he girded up his loins, plunged into the fight with all the force of his character, and in a surprisingly short time had the satisfaction of guiding his firm into safe waters. Little wonder that his word was considered as good as his bond!

A great lesson is to be derived from George Merrell's life. Keen and alert as a business man, he brought into his work the high ideals and ethical principles that are ordinarily supposed to belong to the professions. Indeed George Merrell looked on his life work as a profession, and respecting it accordingly, has given to the world a splendid example of what a man can accomplish who sees in the activities of business ample opportunity for faithful, honorable service to his fellowmen.

Medical Results of the War.—We will not know much about the medical features of the war until it is all over and there is no need of censorship. Disasters must now be concealed from the enemy, so it would be very wrong to come to any conclusions. Dr. Louis L. Seaman of New York made this mistake when he wrote a book about the alleged wonderful work of the Japanese, for when the war was over it was learned that the conditions were the exact opposite of what he imagined. We still hear the Japanese praised for what they did not do.

What little news filters through is rather astonishing—perhaps too much so for belief. The small amount of typhoid fever, cholera and pneumonia is the most amazing of all. The former had been freely predicted but always with the reservation that military sanitarians might be able to prevent it whether or not a vaccine was used to develop deep immunity. Some correspondents have mentioned hundreds of thousands of cases, but it is an exceedingly small percentage of the millions in the

armies, probably less than in times of peace. The French already report the successful use of vaccine as a preventive. Of course there might be considerable rheumatism from exposure but we hear hints of only a little. Every war shows that young men in campaign become so "hardened"—whatever that means—anatomically and physiologically—that they are uninjured by exposures which would have been fatal before. Our numerous civil war veterans here caused some men to conclude that the early hardships have actually prolonged their lives, but weaklings were killed off and the survivors would be expected to live longer than the average.

The early defects of the commissaries seem to have been corrected and we no longer hear of the starved condition of prisoners when captured. Similarly the wounded seem to have more resistance, only $2\frac{1}{2}$ per cent. having died so far, and the great majority return to the ranks in a few weeks or months. Tetanus is not mentioned as much as in the hot season, though it may return as the ground thaws out, but in its place we hear more of gangrene probably as a result of the cold as much as infection. Yet the number of cases of frozen extremities is surprisingly small considering the exposures. The ban on liquor seems to be creating new records all around. The saddest news is in the hints of the number who are breaking down mentally from the strains or committing suicide. Most of them are unquestionably curable acute neurasthenias—plain exhaustion in other words—but there seem to be many psychoses due to permanent changes in the tissues. These men might have eventually become insane in peace, from the wear and tear of the struggle for bread, but the strains of war seem to be hastening the process. By this weeding out, one can safely predict that few veterans will become insane after the war is over. On the other hand, we have not heard a word as to tuberculosis. The outdoor life may be preventing more deaths by this disease than it is causing by others. The medical discoveries of the war have so far been mentioned only in lay journals and we must wait for the full scientific reports. We have mentioned the alleged discovery of a typhoid vaccine which can be taken by the mouth. It seems incredible but more remarkable things than that have happened

before this. Kocher of Berne is said to have invented a styptic powder which is highly efficient in weak solution. Doyen of Paris is reported to have devised a new way of administering tetanus antitoxin. M. Paulin is said to have found a modification of morphin which has no effect on motor nerves;—but it sounds queer. So far, no authenticated revolutionary medical discovery has been announced, and we need not expect any.

The Care and Nutrition of the Infant.

—There is nothing to-day that medical men are more interested in than the scientific rearing of infants and the development of vigorous and healthy specimens of humanity, both physically and mentally. Time was, and not so long ago, when somewhat slipshod methods of feeding and caring for infants prevailed, with the consequence that the infant mortality was frightfully high. It was really the case of the survival of the fittest, from physical standpoints, at least, for only the strongest and toughest survived. But now in most civilized countries systematic efforts are being put forth to preserve the lives of all infants, and it has been demonstrated that quite weakly babies if judiciously fed and placed in favorable environments will become healthy and hardy.

It goes without saying, however, it is amongst the poor, in the ordinary course of events, that the baby stands the worst chance. The infant is neglected on account of the exigencies of the struggle for existence, or else improperly fed owing to the ignorance of the mother.

However, of late years, a movement for the conservation of infant life has been in progress throughout almost the entire civilized world. In this connection it is interesting to note that in Belgium, that highly civilized and cultured little country, so prominently in the world's gaze just at present, the campaign for the saving of infant life was first initiated. In Great Britain Dr. G. Eric Pritchard was the first, or one of the first, to follow in the footsteps of physicians and philanthropists in Belgium and France and introduce into London what are known as infant consultations. Dr. Pritchard is well known in America as a happy and erudite writer on his especial subject, and his works dealing

with the upbringing of infants are not only vastly popular but regarded as standard. Recently Dr. Pritchard has published in book form a series of lectures or addresses which from time to time he has given to students attending the courses held by the Queen's College Hospital for Children, the Medical Graduates College and Polyclinic, the British National Association for the Prevention of Infant Mortality, and other medical societies. Some of these addresses have been published in *AMERICAN MEDICINE*. It may be truthfully said that these lectures embody all that is necessary to know regarding modern scientific methods of feeding and managing infants. Anyone who reads this book will easily and immediately comprehend how wide is the gulf between present day scientific modes of rearing infants and the careless methods in vogue a few years ago. The book in question is written in terse good English and discusses a wide variety of topics bearing directly on the successful upbringing of the young. It would be invidious to endeavor to discriminate in a book in which every chapter is excellent, but it may be said that the chapter dealing with the uses of petroleum and that on mothercraft are perhaps particularly worthy of attention.

The subway accident in New York City deserves at least a mention in medical literature. Populations have become so crowded that it is increasingly necessary to adopt safety appliances which were not needed a few years before. The opinion expressed by the president of the company to the effect that such accidents are unpreventable is too atrocious to be accepted. They *must* be prevented. There are entirely too many risks to life. "Blow outs" and "short-circuiting" ought to be made impossible; if not, it is certainly an easy matter to arrange a system by which train motormen and guards can be informed as to why the current has been shut off. Passengers should be allowed to alight if trains are stalled between stations. The lights should be independent of the power current. Surely the inexcusably bad ventilation can be improved in such a way that there will be a minimum of damage from smoke of fires. That there have been so few accidents in spite of the millions carried, speaks very

well for the management, but this accident is merely a hint as to what is sure to result if better appliances are not installed. We have mentioned the damage to health from the bad air particularly in summer when the heat is stifling and now we find the risk to life is a serious factor. On the strictly medical side of the late accident, we are considerably mystified by the manner in which passengers were overcome by the smoke where they sat, as though the fumes had an instantaneous anesthetic effect. When we are being asphyxiated we generally struggle for air and lose consciousness gradually, during which time we lose our heads. The unknown danger in this case also created a panic of fear which seemed to be contagious—men otherwise sensible became maniacs. All this could be prevented if guards were informed at once by a system of signals or telephones. The firemen and police showed their usual bravery and we are proud of them.

Worse than Plagiarism.—In the January issue of *Health Culture*, an anti-vaccination monthly, edited by Dr. Elmer Lee, 1133 B'way, New York, there is published over my signature, an article containing a few sentences taken from what I had previously published, but all the rest is a jumble of absurd statements, some being the exact opposite of what I have published on the subject of immunization. I understand that the unknown scoundrel who wrote the article, first published it in a paper devoted to patent medicines, whence it was "lifted" by a yellow newspaper and now appears in Dr. Lee's journal. As a result anti-vaccinationists have congratulated me upon joining their ranks.

On two other occasions, yellow newspapers have published garbled extracts from my works in such a way as to give a false impression of the subject and as though they were special articles. There ought to be a way of stopping what is worse than plagiarism, but there isn't, so I must ask the profession not to believe what Dr. Elmer Lee has published as my views, but to accept only what has appeared in recognized journals under my name.

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THE SANITARIUM TREATMENT OF TUBERCULOUS PATIENTS WITH SOME INTERESTING HISTORICAL DATA.

BY

E. L. TRUDEAU, M. D.,
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In 1873, the medical profession took little interest in the disease known as consumption, and the general public knew little about it except, perhaps, that it was thought to be always inherited, and was considered almost invariably fatal. The immediate cause of the disease was unknown, there was no recognized treatment for it except change of climate, and, in a desultory sort of way, patients were sent principally to warm climates, because they coughed, and nothing that could be done for them at home was of any avail. Each medical authority held differing, and often very decided views as to the relative advantages of various climates, some claiming the essential qualities of good climate for the consumptive to be warmth and equability, others laying special stress on dryness and elevation.

Nevertheless, little by little it became evident that the great majority of consumptives died wherever they were sent, and the few recoveries which took place occurred in regions which differed widely as to elevation, temperature, and dryness; that as many patients recovered in the intense

cold storms of the high Alps, and other mountains as in the warm, equable temperature and dryness of atmosphere to be found in such countries as Egypt and the south of France, while cures were reported from time to time in patients who had gone on long sea voyages, or remained in indifferent climates where none of the conditions considered essential existed.

Wherever the consumptive was sent by his physician, little or no stress was laid upon regulating the habits of his daily life, beyond a recommendation to live out of doors, and to exercise as much as possible, while for medication, cod liver oil and, later creosote, were generally prescribed. There was little special hospital accommodation for the consumptive. Most hospitals admitted a few cases of tuberculosis to their general wards, when they had empty beds, and the larger institutions, like Bellevue and Blackwell's Island in New York, had special wards devoted to consumptives.

There were also a few homes for consumptives in existence, but no institution was presumptuous enough to announce that its object in taking these patients was anything beyond affording them a place where they might die.

In the consumption hospitals then in existence the administration of anodyne cough mixtures, and the keeping of the wards at a given temperature, were the only attempts at treatment, and in order to meet the latter condition, and prevent the patients from

taking cold, the windows were generally kept tightly closed—especially at night.

This condition of affairs has come within my own personal observation in a hospital near Philadelphia. This was approximately the attitude of the profession and the public toward tuberculosis, when I went to the Adirondacks in 1873.

This region at the time was a real wilderness, visited during the summer months only by a few sportsmen, and it was there that I met Dr. Alfred Loomis, who, in spite of my critical condition, encouraged me in my determination to remain during the winter. My good wife cheerfully acquiesced in the plan, in spite of the gloomy prognostications of many medical friends who tried to dissuade me from so rash a step, and it was entirely due to her encouragement and determination that we settled down in a small summer hunting lodge, to face the severity of an Adirondack winter, forty-two miles from a railroad or a physician, and completely cut off for weeks at a time by the deep snows from any communication with the outer world.

The spring found me much improved, and it was owing to the good results in my case, as well as in several other patients whom he sent subsequently to spend the winter in the Adirondacks, that Dr. Loomis published a paper, drawing attention for the first time to the climatic value of this region for pulmonary invalids. The following winter, and indeed the next 29 winters I have spent in Saranac Lake, which was then situated 42 miles from the nearest railroad, and consisted of a saw-mill and half a dozen guides' houses, but which has now grown to be a town of four thousand inhabitants, and is known both here and abroad as a health resort.

In 1859 Dr. Brehmer, in Silesia, began

to work out the principles on which the sanitarium treatment of tuberculosis is based, and published several articles on this subject which have been the foundation upon which the sanitarium treatment of this disease, now so generally recognized, has been based.

Brehmer insisted that climate is not the only and all-important factor in treating the disease, and that the consumptive is never injured by exposure to inclement weather, provided he is accustomed to live constantly out of doors; that it is *not so much where* the consumptive lives as *how* he lives, that is of the most importance; and finally that the pulmonary invalid cannot be left safely to his own devices as to his mode of life in any climate.

A life spent entirely out of doors in all kinds of weather, good and abundant food, rest and discipline, are the all-important factors in bringing about a cure.

Brehmer demonstrated by the excellent results he obtained that the careful regulation of the patient's daily life (so far as air, food, rest, and exercise are concerned), is necessary, if the best results are to be looked for, and that if this is done for many months a cure may confidently be expected in a fair proportion of cases.

Nowhere can this plan be followed thoroughly except in a sanitarium built for this purpose, and where the patients live with the physician and are constantly under his eye.

I was greatly impressed with Brehmer's views, and anxious to test his method, the more so as the urgent need of supplying at Saranac Lake a place where persons of moderate means could be properly cared for soon became apparent. Thus, little by little, the idea of starting a sanitarium for working men and women at a cost to them



The beautiful group of cottages for open air which were planned by Dr. Trudeau in the Adirondacks.



Dr. Trudeau's home where he often had as his guests, friends who are patients, seeking the benefit of the mountain climate.

less than the expense of operating it, began to crystallize in my mind. Dr. Alfred Loomis promised the support of his great name, and offered, should I succeed in establishing such an institution, to examine applicants in New York free of charge, a service which he rendered the institution until his death.

The first subscription was given me by Mr. and Mrs. Anson Phelps Stokes, whose ever-helpful interest, as well as that of many of my personal friends, has never failed me through all these years. Thanks to the generous response of these friends, I soon had collected a fund of about \$5,000 and having bought with money donated by guides and residents of Saranac Lake village, a few acres of land on a sheltered hillside which seemed eminently suitable for the purpose, I began the erection of two small buildings. Since segregation of patients was the aim held in view the cottage plan was adopted.

The first cottage consisted of one room, heated by a wood stove and lighted by a kerosene lamp. It accommodated two patients and cost about \$350. It was furnished with a small covered piazza, where, after much persistence and eloquence, I persuaded my first two patients to sit most of the day at rest.

This was, as far as I know, the first attempt in America at applying the sanitarium rest and open-air method according to Brehmer's and Dettweiler's teachings, and from this humble beginning the institution gradually and steadily developed until it has become a small village, and the principles of treatment upon which it was founded have gained general acceptance over the entire land.

The evolution of the cottage has continued, and the latest cottages are substan-

tial yellow brick and stone structures, costing about \$5,000, and accommodating four patients. They are models of convenience and comfort, and are eminently adapted to carrying out the open-air treatment. They are lighted by electricity, heated by hot water and fireplaces, supplied with baths and running water, and each room opens directly on to a covered veranda, upon which the patient's beds are easily pushed when ordered temporarily to remain in bed, as well as to sleep out at night.

Each year as obstacles presented themselves they were overcome, and as needs developed they were supplied. As time passed, the struggling institution needed, in turn, more land, an abundant water supply, good drainage, electric lighting, a crematory for the disposal of infectious material, an open-air recreation pavilion, many more cottages, a library, a chapel where religious services could be held, and an infirmary where the very sick could be properly nursed, and as the cottages increased in number, a new administration building suited to the enlarged needs of the growing community.

As these needs arose from year to year, they were supplied, thanks to the never failing generosity of the sanitarium's friends, until to-day a small village consisting of twenty-two buildings entirely free from any financial encumbrance, has grown up about the little one-room cottage which stands as a reminder of the institution's humble beginning.

New problems had constantly to be solved. One of these was the nursing of the acutely ill cases. Though patients when admitted were in such condition as to require nothing more than general supervision, sooner or later after admission, some of the complications of the disease, such as hemorrhage, pleurisy, and the tuberculous pneumonia and



Winter snows have no terrors for those who are seeking health by open-air living.



Simple light work in the work shop is encouraged for patients with early tuberculosis whose temperature is normal.

exacerbations, so frequent in this disease, would transform a promising patient, entirely able to care for himself, into a bed-ridden invalid, who needed for weeks or months, both day and night, constant nursing and attention.

During the earliest years of the sanitarium's existence, when it was still 42 miles from a railroad, no nurses were available, and I had no money to procure them. I had no resident physician and nothing to offer as a salary to one, so that during the summer I had to do the medical work of the institution as best I could, being obliged to drive fourteen miles each way, in order to accomplish this. But the problems were finally solved.

A physician was found in all health himself, who was induced to take up his abode at the sanitarium, giving what service he could in return for his board and lodging; then the gift of the Hall Memorial, and later, the Childs Memorial, put at our disposal buildings where patients could be transferred at once when acutely ill, and furnished every convenience and appliance for carrying out the most approved methods for their nursing, and treatment until sufficiently recovered to be returned to their cottages.

The requisites for admission to the sanitarium have always been that the applicant should be in the earlier stages of the disease, or with a fair chance of more or less complete restoration to health, and that his pecuniary circumstances should be such as to make it impossible for him to pay the usual prices asked at the hotels and boarding houses of the region.

The price charged from the first has been five dollars a week, and has remained the same for the past twenty years, in spite of the greatly increased cost of operating the

institution due to improved methods and the higher cost of living. Each patient costs the institution from eight to nine dollars a week, so that there is a deficiency of about four dollars a week on every patient.

There are no private patients and no graded rates, every one being on the same basis. No charge is made for medical attention, and no extra charges except when the patients are so ill as to be confined to bed and taken to the infirmary, thus requiring constantly the services of a nurse, special diet, etc., when the additional regular infirmary charge of five dollars a week is made. The sanitarium has also a small free bed fund, the income of which is applied to defray the expenses of patients whose resources have entirely given out.

In my report of 1902 we find of the really incipient cases, which were 40 in number, 75 per cent. were discharged as apparently cured, 15 per cent. had their disease arrested, and 10 per cent. improved; while of the advanced cases, 99 in number, 12 per cent. were discharged as apparently cured, 57 per cent. with disease arrested, 22 per cent. improved, 8 per cent. failed, and 1 per cent. died in the institution; of the far advanced cases, none was apparently cured, in 33½ per cent. the disease was arrested, 33½ per cent. improved, and 33⅓ per cent. failed while under treatment.

Thus, for the 165 cases at whatever stage treated during that year, we find that 30 per cent. were discharged as apparently cured, in 41 per cent. the disease was arrested, 19 per cent. improved, 7 per cent. failed, in 2 per cent. the diagnosis was doubtful, and 1 per cent. died in the institution.

Of the 1,500 cases under consideration, which have been discharged from two to



E. L. TRUDEAU, M. D.

seventeen years, 434 could not be traced, leaving 1,066 which have been traced. Of these, 46.7 are still living. Of these 31 per cent. are known to be well at present, in 6.5 per cent. the disease is still arrested, 4 per cent. have relapsed, 5.2 per cent. are chronic invalids, and 53.3 per cent. are dead.

As to the influence of the stage of the disease on the permanency of the results obtained, 66 per cent. of the 258 incipient cases are well at present. Of the 563 advanced cases 28.6 per cent. are well, and of the advanced cases 2.5 per cent. only, remain cured.

Thus we learn that 31 per cent. of all cases discharged from two to seventeen years ago have remained well, that 66 per cent. of the incipient cases discharged during the same time continue well at present, and these figures, discouraging as they may seem to those of you who are not familiar with this fatal malady, emphasize the importance of making an early diagnosis, and teach us exactly to what extent we may count on saving and prolonging life by this method of treatment.

A TRIBUTE TO DR. EDWARD L. TRUDEAU—A MEDICAL PIONEER.

BY

SIR WILLIAM OSLER,
London, Eng.

"Now and then men are fortunate enough to overcome the worst foes encountered in the battle of life—chronic ill health, and an enforced residence in a paralyzing environment. The attitude of mind so splendidly expressed in Henley's verse 'Out of the Night that Covers Me,' scoffs at the menace of the years, and unafraid, with unbowed head, the happy possessor of the un-

conquerable soul of this sort feels that

'It matters not how strait the gate,
How charged with punishment the
scroll,

I am the Master of my Fate;
I am the Captain of my Soul.'

"And this was the lesson of Edward Trudeau's life—the lesson of a long and successfully fought campaign. An implacable foe, entrenched within his own citadel, has been often brought to terms of truce, never wholly conquered. Little did he think when it drove him from a brilliant career in New York to seek health for himself in the wilderness that he was entering a land of promise—that he was destined to become the Joshua of a movement of national importance, and an authority of world wide reputation on the very disease which had made him flee for his life.

"And he would not be saved alone; and in many thousands of hearts to the words find echo which Matthew Arnold sings of his father:

'We were weary, and we were
Fearful, and we in our march
Fain to drop down and to die,
Still thou turnedst, and still
Beckonest the trembler, and still
Gavest the weary thy hand.'

"While holding his own defences, Edward Trudeau has fought the fight for others, and has devoted his life to a masterful study of the tactics of the great enemy. His has been the faith that saves—faith in the success of the methods he knew so well, the faith that could give hope to those from whom hope had flown, and above all, the contagious faith in himself, that rallied to his support his brethren in the medical profession, and the group of laymen, through whose assistance the Adirondack Cottage Sanitarium has become a veritable Mecca.

"This shows what a badly crippled man may do single-handed, once let him gain the confidence of his brethren, medical and lay. Trudeau had the good fortune to be made of the stuff that attracts to himself only the best, as a magnet picks out iron.

"Of an unselfish, sympathetic disposition he secured the devotion of his patients, to whom he was at once a tower of strength, and a splendid example. The Sanitarium has become a model, and the methods of work and results have reached a degree of excellence which must be very gratifying to its founder.

"The strong fibred nature of Trudeau, is best illustrated by the fact that amid the worries of patients, and the perennial financial struggle to make both ends meet, he stuck close to the scientific side of his profession and from the laboratory of the Sanitarium have come many important contributions, which have enriched the literature, and reflected the greatest credit upon American medicine."

THE CHEMISTRY OF SCOPOLAMINE.

BY

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The solanaceous alkaloids include according to Henry, (*The Plant Alkaloids*, 1913), nine members with the following names and formulae:

Apoatropine	} $C_{17} H_{21} O_3 N$
Belladonnine	
Atropine	} $C_{17} H_{23} O_3 N$
Hyoscyamine	

nor-Hyoscyamine	$C_{16} H_{21} O_3 N$
pseudo-Hyoscyamine	$C_{17} H_{23} O_3 N$
Meteloidine	$C_{13} H_{21} O_4 N$

Scopolamine	} $C_{17} H_{21} O_4 N$
Hyosine	

These are esters of various acids such as tropic, atropic, tiglic or benzoic and yield on hydrolysis one of these acids, together with a basic alcohol, tropine, *pseudotropine*, *nortropine*, *scopoline* or *teloidine*. They all yield characteristic aurichlorides, and are all mydriatics, but only three of the number, atropine, hyoscyamine and scopolamine are used to any extent in medicine.

As we are chiefly interested in scopolamine at this time, we will confine our studies to it alone, excepting when brief reference to the others may become necessary for comparison.

Scopolamine is found in *Datura arborea*, *Datura fastuosa*, *Datura Metel*, *Datura meteloides*, *Datura quercifolia*, *Datura stramonium*, *Duboisia myoporoides*, *Hyoscyamus albus*, *Hyoscyamus niger*, and a trace in *Scopolia carniolica*, *atropoides*, *hladnikiana* and *japonica* from which later it was isolated and described by E. Schmidt,¹ in 1890. It was later obtained from the rhizome of *scopolia carniolica*. The same alkaloid had been previously obtained under the name of hyoscyne from *hyoscyamus niger* by Landenburg² who regarded it isomeric with atropine, which is now thought improbable, as no alkaloid, isomeric with atropine, or hyoscyamine is to be found in *hyoscyamus niger*, Landenburg's hyoscyne must have, therefore, been an impure scopolamine.

Scopolamine is usually obtained from the mother liquors from which hyos-

cyamine has been prepared. The base crystallizes with $1\text{H}_2\text{O}$ in transparent prisms with a melting point of 59°C . It is only slightly soluble in water, is laevorotatory; the hydrobromide salt crystallizes in rhombic tablets which are readily soluble in water and alcohol, but sparingly so in chloroform; insoluble in ether. It has a bitter and acrid taste, showing slight acid reaction to litmus. This is the salt mostly used in medicine.

Scopolamine as well as hyoscyamine is readily transformed by dilute alkalies into an optical isomeride, i-scopolamine (atros-cine). This change is also brought about by very gentle heating to which is due the fact that commercial scopolamine hydrobromide invariably contains the inactive salt. Hesse³ isolated from the scopolamine hydrobromide of commerce an optically inactive alkaloid isomeric with scopolamine which he called atros-cine, but according to Schmidt⁴ this was found to be merely i-scopolamine. Gadamer⁵, however, showed Hesse's atros-cine to be the di, and Schmidt's the i-scopolamine as mono-hydrates of the same alkaloid.⁶ Scopolamine hydrobromide from henbane seed has according to Merck⁷ a rotation of -24° to -25° ; while that from scopolia rhizome rotates to -13.47° . This clearly shows that scopolamine obtained from the scopolia rhizome always contains some inactive scopolamine, which can only be removed by a rather complicated chemical procedure, requiring a very high degree of chemical knowledge and skill.

A LIST OF THE SOLANACEOUS PLANTS CONTAINING THE VARIOUS ALKALOIDS
UNDER DISCUSSION.

Datura aborea:

Scopolamine
Hyoscyamine

Datura fastuosa:

Scopolamine
Hyoscyamine

Datura Metel:

Scopolamine
Hyoscyamine

Datura meteloides:

Scopolamine
Atropine
Meteloidine

Datura quercifolia:

Scopolamine
Hyoscyamine

Datura stramonium:

Scopolamine
Hyoscyamine

Duboisia myoporoides:

Scopolamine
Hyoscyamine
 Ψ Hyoscyamine or
nor-hyoscyamine

Hyoscyamus albus:

Scopolamine
Hyoscyamine

Hyoscyamus niger:

Hyoscyamine
Scopolamine
Atropine

Scopolia carniolica:

Hyoscyamine
Scopolamine trace

Scopolia japonica:

Hyoscyamine
Scopolamine.

As the solanaceous plants contain various alkaloids, and varying quantities of the different alkaloids, one must expect the process of isolating a particular constituent entirely free from others to be rather difficult. Then we have seen that scopolamine may be optically active or inactive, all of which would necessarily influence the physiological action of the agent. That

there are grounds for doubt as to the uniformity of chemical purity or identity would appear because of so wide a range of dosage given by investigators.

Mandragorine $C_{17} H_{23} O_3 N$ an alkaloid obtained from *mandragora officinarum* was isolated from the root by Ahrens *Berichte* 1889, 22, 2159. Mandragora (mandrake) was well known to the ancients from which they made a wine of mandragora, probably the first anesthetic used in surgical operations. Thoms and Wentzel, *Berichte* 1901, 34, 1023, found mandragorine to be a mixture of hyoscyamine and scopolamine with perhaps a minute quantity of a third alkaloid. Hesse recently asserted this third alkaloid to be the *pseudohyoscyamine* and that he found a new alkaloid also called mandragorine which has the composition $C_{15} H_{19} O_2 N$, which furnishes a crystalline aurichloride with a melting point of 124° to 126° , and which on hydrolysis yields tropic acid and a base resembling tropine. (*Journal prakt. Chem.*, 1901, II, 64, 274). *PseudoHyoscyamine*, which was isolated by E. Merck, (*Archives of Pharmacy*, 1893, 231, 117) from *Duboisia myoporoides*, is isomeric with atropine and hyoscyamine. It crystallizes from a mixture of chloroform and ether in needles with a melting point of 133° to 134° ; is laevorotatory. When heated with baryta water it hydrolyzes into tropic acid and a base $C_8H_{15}ON$, which is neither tropine nor *pseudotropine*.

The reader will recall the references to mandragora in Shakspeare's King Henry Sixth, Part Second, Act III, Sc. 2. Also in Romeo and Juliet, Act II, Sc. 3, and Act IV, Scs. 1 and 3. The writer has previously expressed his belief that the "phial of distilled liquor" given Juliet by good Friar Lawrence, contained a "Wine of

Mandragora," such as referred to above, as having been used by the ancients to produce anesthesia.

The close chemistry of scopolamine, its numerous sources of supply and the difficulty in isolating it from its associated alkaloids, as well as its unstable character will account for the varying physiological action and the confusion concerning the proper dosage. It is well known that the same structural formula of a chemical does not insure like results, when there is isomerism as is so well illustrated in the experimental and clinical uses of the ortho, para and meta products, having each the same constitutional formula, one being a violent poison, another comparatively harmless.

Scopolamine should be prepared by a skilled chemist, from one source, if possible, and standardized, making certain that it is free from associated or by-products. Solutions should be made from the crystals at time of using, as stock solutions and tablets have been shown to change through hydrolysis or even a small degree of heat.

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80 Washington Square E.

In any disease of the veins the free use of hamamelis internally and externally will invariably produce good results.

Two drams of ammonium chloride with lobelia in a pint of water, make an effective application for rhus poisoning.—*Ellingwood's Therapeutist*.

TWILIGHT SLEEP IN OBSTETRICS.

BY

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It has always been the desire of the accoucher to alleviate the sufferings of childbirth as far as possible, but when administering powerful narcotics, one must take into consideration the possible deleterious effects upon the child. It is a comparatively easy matter to make childbirth practically painless, but we must be sure that the child does not suffer as a result.

The combined use of scopolamine and morphine was first introduced into obstetric work by von Steinbüchel of Graz, and the first exhaustive paper was written by Gauss of Freiburg, entitled "Births in Dämmer-schlaf." This was published in the *Archiv für Gynäkologie*, (Band 78, Heft 13), in 1906. It will repay the student of the method, to read very carefully every word of this admirable essay.

The writer first speaks of the symptoms induced by the drugs, consisting of the sleep between the pains, thirst, dry mouth and throat, flushing of the face, slight twitching of the fingers and motor restlessness. He then states that "only a slight deepening of the seminarco-sis is sufficient to cloud the consciousness without entirely abolishing it so that the final results of a skilfully graduated dose is a kind of artificially confused condition, the principal character of which is a complete amnesia extending over the whole process of birth." The patient appears sleepy, but answers questions intelligently, and later, one is astonished to learn that the patient whom one believed to be completely conscious, has not the slightest idea after the birth of what she had gone through, or

of the conversation held with her. Gauss states "there can be no possible doubt that birth loses the character of an injurious trauma to the same extent as the physiological suffering and the mentally injurious impressions are reduced or even abolished."

Gauss then speaks of the tests to be applied, first mentioning the Babinski phenomenon. This, he says, is a sign of the beginning of the action of scopolamine which appears very early, and it is important to ascertain that "the functional cutting out of the cortex of the brain was already taking place."

Speaking next of the pupillary reflex, he states that the stronger the narcotic effect, the less will be the dilation of the pupil due to labor pains. This is so in many cases, but in others the effect is absent, for the pupil may be greatly dilated by scopolamine; hence the absence of the reflex cannot be regarded as an absolute indication of the extent to which the consciousness has lapsed.

The locomotor coordination test is often ambiguous, in deeper narcosis the coordination being often absent. The most important test is the memory test, showing the power of perception. The writer then speaks of the "memory islands" which are caused by insufficient dosage. When bridged across, the patient erroneously believes that she has a genuine recollection of the entire labor.

Operative delivery was performed in 12.6% of all cases, which does not seem excessive. Among the contraindications he mentions uterine inertia, anemia, debility, history of short labors, and intercurrent diseases. Heart disease is not a contraindication.

Coming now to the most important consideration, namely that of the child, for danger to the mother is conceded by all ob-

servers to be practically *nil*, we found that in Gauss's 500 cases (of which six were twin births), 500 children were born alive (98.8%) and six were still born (1.2%).

Of the 500 babies born alive 316 or 63% were lively, that is, normal (four were born prematurely and died within a short time), 119 babies or 24% showed the condition known as oligopnea. This phase of intoxication, to quote Gauss's own words was about as follows:

The moment after the completed birth the new-born child breathes once with a more or less vigorous cry and then lies motionless but with uninterrupted action of the heart, often also moving the limbs. From time to time follows a short breath, so that in the intervals a state of changing cyanosis develops in consequence of carbonic acid accumulating in the body, also on account of lack of oxygen. The eyelids open spontaneously, only to be closed again slowly. The width of the pupils varied so much that it was not possible to draw a conclusion as to the strength of the narcotic effect; in the majority of cases the pupils were found to be of average width or over average width.

The following is especially characteristic of this condition: The babies react well upon irritations, but the reflectory actions of the muscles are often interrupted quite suddenly and before their completion, as if the execution of the intended movement had been suddenly forgotten. In the meantime the action of the heart is seen to be distinctly dependent on the manner of breathing; with increasing lapse of the time since the last breath, the heart beat of the fetus is slowed gradually to about 60 beats, and rises at once to normal frequency after the next gasp. This alternation is constantly repeated in ever shorter intervals until the respiration becomes regular of its own accord, or by external influence. At first I viewed this condition with great distrust and

thought myself to be obliged to start, at once, attempts to restore life. By and by, watchful waiting in appropriate cases proved this apprehension to be exaggerated, so that at various times I waited patiently to see whether the children would attain normal condition without any external influence; several children that had been watched in this manner for from 15 to 20 minutes found their way by themselves, their respiration becoming gradually more frequent and finally regular; the question, whether the children born in an intoxicated condition would overcome their apnea or oligopnea without medical assistance, is to be answered in the affirmative with that degree of probability, with which in medicine we are entitled to calculate.

Nevertheless, I always felt obliged to remain in the house as long as a woman in labor was under the influence of scopolamine-morphine, and until a considerably greater number of cases has been observed, I shall continue it my duty to hold myself in readiness for prompt assistance.

It was found that slight tickling of the skin was, as a rule, sufficient to produce regular deep breathing and loud crying. The quickest and surest method was always a rhythmic massage of the heart, probably principally because this method combines tickling with a direct influence on the heart and respiration.

I have arrived at the following explanation of this very peculiar condition: The child is born with a quantity of the narcotic received through the placental respiration. The first gasp takes place at the moment of birth, probably on account of the joint action of various factors, such as sudden variation of pressure, cooling of the skin, mechanical irritation of the skin, in conjunction with the stimulation of the centre

of respiration through lack of oxygen and accumulation of carbonic acid. If the child remains tranquil, the chemical irritation of the centre of respiration produces in the future continuous breathing. In the case of babies born during their mother's *dämmer-schlaf*, however, the stimulation of the centre of respiration is not physiologically strong enough; it is perhaps weakened by the effect of the narcotic and requires first a greater overcharge of the blood with carbonic acid, and a more pronounced lack of oxygen, eventually even renewed tickling to start and maintain regular breathing.

The favorable and prompt effect of resuscitation I may compare to the similar effect of a fly wheel; once set in motion it is kept in motion permanently by small, regularly acting forces which would not have been sufficient to start it.

The main point is, therefore, to get the oligopneic children through the difficulty of the sluggish reaction of the centre of respiration by means of external stimulation in order to attain a prompt regulation of the life functions. Although I do not believe that this intoxicated condition harbors any serious dangers to the organism, I have nevertheless, taken occasion to avoid it experimentally by modifying the dosage.

On the strength of my observations I thought that the intoxicating effect was caused by the dose of morphine, and I tried, therefore, to lessen the dose or even avoid it altogether, while maintaining or eventually increasing the dose of scopolamine. These experiments of dosage, had the interesting results, with regard to the child, that a curtailment of the dose of morphine permitted me to avoid the unwillingly taken risk of causing oligopnea or apnea respectively without rendering uncertain the establishing of the *däm-*

merschlaf. If the quantity of scopolamine was increased beyond a certain limit, eventually even omitting morphine entirely, slight intoxicating effects were observed in the child which were the more pronounced, the dimmer the state of consciousness of the mother. If the first injections were heavily overdosed the intoxicating effect upon the child took place sooner than in its mother, whilst the latter still retained unclouded consciousness the former was eventually born in a state of apnea. Morphine by itself causes deep apnea in the child at birth. In the same manner as the condition of the new-born child may be taken as the best indication as to the correctness of the dosage applied, it is possible, according to my experience, to inversely infer the condition of the child to be expected at birth from the degree of dimness of the consciousness.

In 500 labors, 65 of the children were born asphyxiated, in 47 of which the asphyxia could be explained by long labor, cord about the neck, operative delivery, etc. In 18 no sufficient explanation could be found, but in all these babies, symptoms of intoxication characteristic of oligopnea were lacking, and, as Gauss states, it is not always possible to explain asphyxia in the new born. In 1911 Gauss stated that he had applied the method in 3,000 cases without change in the technic. Eighty per cent. of the babies were born "brisk and lively," 16 per cent. were oligopneic, and 59 per cent. showed asphyxia. He declares the oligopnea to be devoid of danger, when not caused by over-dosage of morphine.

Forceps cases averaged between 6-7 per cent., and manual extraction of the placenta 4 per cent. He obtained *dämmer-schlaf* in about 63-65 per cent. of all cases, and a higher percentage (82) in his

first class patients. Gauss at that time stated again most emphatically that upon the test of the power of memory and by this test alone the method must stand or fall. He compares "Twilight sleep" to a narrow mountain crest, to the left of which lie the dangers of too deep narcosis and absence of labor pains, while to the right, lies the danger of too shallow action, with retention of consciousness and sensibility to pain.

Our own experience with the method is limited to 80 cases seen in the services of the Harlem and Post Graduate Hospitals of this city. In most of these cases we have used the method outlined by Siegel, which was published in the *Deutsche Medicinische Wochenschrift*, May, 1914. As this method had given excellent results at Freiburg, and seemed a much simpler procedure to carry out in the hospital, we adopted it. Treatment was begun when the patient was in active labor with the cervix partially dilated and the pains recurring at about five minute intervals. The woman was put into a small, darkened room, whenever this was possible, her ears were filled with cotton and a towel was placed over the eyes. The first dose consisted of scopolamine .00045 gm. or about 1-135 grain, with narcophine one-half grain. Forty-five minutes later the same dose of scopolamine was given, without the narcophine. Forty-five minutes later a third dose of scopolamine, .00015 gm., or about 1-400 grain was given with narcophine one-fourth grain. Subsequently the patient received scopolamine .00015 gm. or 1-400 grain every 1½ hours, the narcophine being repeated in one-fourth grain doses, which every third dose of the scopolamine. Forty-six patients were treated by this method at the Harlem Hospital by Dr. Stein and myself. Of these, 35 cases showed good results both as to analgesia

and amnesia; in eight cases the results were fair and in three there were no results. There were eight operative cases of which one was for hydrocephalus following version, six were forceps operations and one breech extraction. There were no complications affecting the mothers. Thirty-one of the babies cried immediately after birth. Fourteen cried after some manipulation, several babies requiring hot and cold baths, artificial respiration, etc. The forty-sixth case was as follows: The patient was a primipara and when the first dose was administered, the cervix admitted two fingers. Four hours later the child was born spontaneously, deeply narcotized. Three doses only had been given, the labor was short, the cord not around the neck, yet more than one hour was required to stimulate the respiration so that the child breathed fairly well. Ten hours after birth, Dr. Cohen, the consulting ophthalmologist examined the child's eyes and described the condition as bilateral venous hyperemia of the retinal and conjunctival vessels. Thirty-two hours after birth the child died, the respiratory center having been profoundly disturbed for hours preceding death. Autopsy showed venous engorgement of the brain and all the viscera, but the cause of death was undetermined. A recent case in the service of the Post Graduate Hospital was very similar to that just reported. Labor began early in the morning and at three p. m. when the cervix was dilated two fingers, the first dose was given. The fetal heart varied between 140-160 but at 7:00 p. m. was of good quality. At 7:10 p. m. one c. c. of pituitary extract was given, with negative result.

At 7:30 p. m. the heart could not be heard and the child was quickly extracted with forceps, the operation requiring but

a few minutes. The child weighed six and one-half pounds and was in deep narcosis, and it required one hour and a quarter to make it breathe. The baby did not cry until hours afterwards. Several times during the night the child had to be spanked to arouse it. The cord was loosely wound around the neck once but I do not believe the position of the cord was responsible for the condition of the child. The child acted as if it had been drugged and there was bilateral hyperemia of the conjunctival vessels. Thirty hours after birth the child died and autopsy revealed nothing of interest except that there were no signs of asphyxia.

One of the disadvantages of the Siegel plan of treatment, in our experience, was the excitement produced in some patients. On several occasions, the services of three nurses were required to keep the patient in bed. Considering this method from all standpoints, we have abandoned it and we are now using the following plan: a dose of one c. c. of scopolamine = .0003 gm. or 1-200 grain is given with morphine gr. 1-8. One hour later the same dose of scopolamine is repeated. From one to three hours later, one-half c. c. of scopolamine = .00015 gm. or 1-400 grain is given, the same amount being repeated in from two to four hours as may be indicated. Morphine is only repeated in dose of 1-16 grain, in case of absolute necessity.

In order to be sure of a stable preparation the scopolamine is made up in a 10 per cent. mannite solution, one c. c. = .0003 gm. or 1-200 grain. At the Harlem Hospital, since the inauguration of the new method, Dr. Stein and the writer have had 21 cases. The average dose of scopolamine in primiparae was 1-77 grain, in multiparae 1-100 grain. Seventeen patients had ver-

tex presentation and delivered themselves spontaneously. One patient delivered herself normally of a breech presentation. One woman required a podalic version for the birth of the second twin, one patient required median forceps for contracted pelvis, and there was one low forceps operation. There were no maternal complications. Fifteen patients showed complete amnesia, and two partial amnesia. The others were helped to a considerable degree, but showed no amnesia. Seventeen of the babies cried immediately, or the respiration was only slightly delayed, and three showed oligopnea (one baby a twin). One baby was born asphyxiated at seven months, and died a few minutes after birth. There were no still births. Three of the babies died in the puerperium, one of atelectasis, the child having but one kidney, one of syphilis, and the third reported above of prematurity. In the preparation of our statistics, and for the interested observation of our patients, we express our indebtedness to Drs. Kassebohm and Minervini of the Harlem Hospital House Staff. Our results we believe are much better with the new plan of procedure. In conclusion, we believe that the use of "Twilight sleep" is still in the experimental stage, and that while highly desirable in many cases, further experience is necessary if we are to obtain ideal results. Patients should be treated in a hospital, with a well equipped staff of physicians and nurses, under the supervision of a competent obstetrician, or at home provided the obstetrician can remain in constant attendance at the bedside. It is apparent, therefore, that the use of the method will be comparatively limited, but it cannot be denied that in properly selected cases, under competent supervision, "Twilight sleep" may prove to be both safe and of inestimable

benefit to all, as indeed it has already proven itself to be in the larger number of our cases.

144 West 58th Street.

TWILIGHT SLEEP: ITS FUTURE AND RELATION TO THE GENERAL PRACTITIONER.

BY

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While scopolamine or hyoscine and morphine in obstetrical practice have been used in this and other countries for some time, it was in Freiburg in Baden that the method was developed to a degree never approached elsewhere; so that we may say that the Freiburg method is a distinct entity, *sui generis*, and not at all similar to methods used here. And their good results in thousands of cases prove that the method is feasible, that it is without danger to the mother, that it is innocuous to the baby if individualization is used, and that the amnesia produced takes away from childbirth the intensity of suffering frequently seen in normal births.

Not only have good results been obtained in Freiburg, but elsewhere in Europe, by men trained in Freiburg, similar results have followed the careful use of the Gauss method. No one who has investigated the matter doubts the sincerity, honesty and truthfulness of the reports of Krönig and Gauss. On the other hand, there are other honest and truthful men in Germany who have reported poor results with "Twilight sleep"; but when the matter is investigated we find that they did not follow the Gauss method, or else used an unstable and decomposed solution of scopolamine.

In discussing the value of "Twilight sleep" we cannot consider the statistics in this country previous to this last summer, because no one here used the Gauss method; and again, we had no stable preparation of scopolamine. There have been many claims made that "Twilight sleep" has been used here for a number of years; but inasmuch as the word "Twilight sleep" was coined by Gauss to represent a condition induced by the Freiburg method, no one has a moral right to use the phrase loosely as applied to any method of giving scopolamine and morphine. After a trial, all—or nearly all—American obstetricians discarded the use of scopolamine and morphine in labor as then practiced, because of the poor results obtained; but the Gauss method was not followed, nor were stable drugs used.

Recently, men in this country who have investigated the Freiburg method to such a degree that they have understood the method and who have given thought and attention to their cases, have reported very excellent results; and as these same obstetricians had previously used and discarded hyoscine and morphine, their improved results must have been due to the new method of using the drugs and to the stability of the scopolamine solution.¹

In the series of cases here reported, we have with a few exceptions, followed the Gauss method to the strictest detail, using 0.01 morphine hydrochloride in one dose and a stable preparation of scopolamine with mannite. It has not always been possible to keep our patients free from outside noise and in a few instances, due to the exigencies of a large hospital, the patient has not been followed as carefully as

¹For a description of the Freiburg Dämmer Schlaf in detail, the reader is referred to my paper in the December, 1914, issue of the *American Journal of Obstetrics*.

is necessary to attain the best results. There has also been incomplete success in a few cases due to the fact that the physician watching the patient has not had sufficient experience with the method; this, of course, is unavoidable in a large hospital with a changing house staff. Also in a few cases the best obstetrical judgment was not used. So that I know the results could be better than here reported, but they are nevertheless excellent and will compare favorably with any series of births under similar conditions but without "Twilight sleep."

Since my return from Freiburg in August, I have had under my charge, although not entirely conducted by me, 101 cases of "Twilight sleep," most of which were in Gouverneur Hospital, New York City. Of these there were:

Complete amnesia	78 cases
Partial amnesia	12 "
Analgesia	2 "
Failures	9 "

Of the failures, five cases had only one injection which of course was not a fair test.

There was no maternal mortality due to "Twilight sleep," directly or indirectly. One mother died with pneumonia, two weeks post partum. This was in no way attributable to the technic employed, nor were there any material complications traceable to the method.

As to the children, there were:

Eight cases of oligopnea in one of which the cord was wound tightly about the child's neck; all lived.

Two cases of asphyxia—one a syphilitic child and one with cord around neck tightly; all lived.

Two cases of still-birth, one due to the failure of the attending physician to properly resuscitate the baby and should have been avoided; the second case was a prolonged labor extending over several days, with a

large child and moderate contraction of the pelvis, in which no attempt was made to keep the patient in a Twilight sleep, but injections were given at very long intervals to give the patient a little rest; the patient was allowed to remain too long in the second stage of labor.

One case of craniotomy in a para—ix with a marked mitral stenosis moderately compensated, with a large child and slightly contracted pelvis, in which the indication for the Twilight was the patient's heart—after giving ample time there was no engagement of the head and the obstetrical conditions made any other method of delivery too dangerous to be undertaken. In other words, the Twilight had no relation to the craniotomy.

Eighty-nine babies (1 set twins) cried spontaneously and showed no sign of scopamine poisoning either at birth or while in the hospital.

Forceps were used in seven patients—in all cases easy low forceps. Pituitary extract was used in a very few cases—3; some of these are included in the forceps cases.

A breech extraction after version was done in one case because of a transverse position of the child. There was also one normal spontaneous breech delivery.

The restlessness in four of our cases was severe, due to imperfect technic in the administration of the drugs; there was slight restlessness in six other cases.

The third stage of labor was uneventful in all of our cases, except one where there was moderate post partum hemorrhage in a para-ix.

It is not easy for us to say whether the first stage of labor is lengthened or shortened, because of the difficulty in ascertaining just when labor began. But from observations made during the first stage of labor, this period seems to be somewhat shortened. At any rate, there can be no doubt about the fact that it is more pleasant to the patient and to the attendants; and from conversation with the patient after the ordeal is over, one must conclude that the time at least *seems* shorter to the patient.

It is probable that the second stage of labor is slightly prolonged. This prolongation may be marked in some cases and entirely absent in others. However, if the patient is watched and the obstetric necessities considered and the fetal heart watched, there is no danger in this prolongation. Nevertheless, this stage of labor will bear watching and may demand interference. Our low percentage of forceps would seem to indicate that the necessity for interference is not often marked. It will also be noted that we have used pituitary extract in every few cases. The prolongation of the second stage of labor reported by men who are antagonists of "Twilight sleep" is in great part due to faulty technic; if the exhibition of scopolamine at this time is guarded, there will be but little interference with the normal second stage, and complete amnesia during the whole period may be continued by the judicious use of chloroform or ether. Our series of cases seems to support Gauss's contention that "Twilight sleep" is not dangerous to the mother, nor to the child; nor does it interfere with the natural birth processes.

The Future: Any method that is safe for mother and child, and which will, at the same time, diminish the pain of childbirth, must inevitably come into general use; this will, however, not be accomplished in a month or a year, but will require time—a considerable period of time. Because, first, the true Freiburg method is not easy to use and must be learned by patient observation of successful cases, combined with extensive reading of the authoritative literature of the subject. Again, that great bar to progress, inertia of the mind, still lingers with us and many physicians will not use the new method because for centuries babies have been born without the use of drugs.

This frame of mind will be strengthened by the reports of the bad results obtained by us in past years in the use of scopolamine or hyoscine and morphine when we were not using the Freiburg technic. Bad reports will, undoubtedly, be published under the heading "Twilight sleep," when in reality no attempt has been made to adequately carry out the true method.

There will also be difficulty in securing a proper environment in our hospitals and the practical difficulties encountered in carrying out the method in homes will serve to retard the general acceptance of the method.

There are many women, too, who have easy labors and who do not need "Twilight sleep," and there are others in which the method should not be used.

The seeming exploitation of "Twilight sleep" in the popular magazines and the ready acceptance, without investigation, by some physicians who may be more interested in the attendant publicity than in the scientific side of the question, have naturally aroused the opposition of the conservative and scientific physician; many of the latter, in turn, have become so blinded in their opposition that they cannot see and will not see the truth. In time, however, the proper balance will be struck, and then we shall forget everything except the fact that when properly given and in suitable cases, Twilight sleep is a great advance in obstetrical technic. When this is accepted, it will be the province of the physician to provide a suitable place for the treatment and this means a hospital, preferably a small community or private hospital where, under proper circumstances, the physician is relieved of much of the drudgery of obstetrical practice. Of course, this will give an opportunity for the skillful trained nurse to obtain the

necessary training to become expert in the use of scopolamine and if the physicians of a community will combine to support such an establishment, they will be able to practice much better obstetrics and that with more ease to themselves and to their patients. While it may be possible to carry out a "Twilight delivery" in a properly equipped private home, the difficulties encountered may be many, and it becomes impracticable from the fact that two of a physician's patients may be in labor at about the same time, whereas in a central hospital this would make no difference.

There can be no doubt that the attention paid to "Twilight sleep" will cause the practitioner to think more about the obstetric patient and will make the patient more willing to submit to the pre-natal examination and care that may prevent some complication during labor. All of this must lead to better obstetrics—of which we must confess there is need—and with better obstetrics will come a proper appreciation of scientific obstetrics by the patient. In short, the end result will be an increasing advantage both to the patient and to the physician; the only one to suffer will be the gynecologist who will not be so busy repairing the damage caused by poor obstetrics.

59 West 54th St.

Chronic recurrent appendicitis may closely simulate the clinical picture of a peptic ulcer, owing to reflex motor and secretory perversions of the gastric functions.—*Eus-terman, Journal-Lancet.*

Salvarsan is curative in any malady caused by spirilli; less so in diseases where the infecting organisms are found in the blood or lymph; very valuable wherever arsenic has proved of use; and if used cautiously and long, is useful where arsenic has not succeeded.—*Best, J. A. M. A.*

HOW CAN THE GENERAL PRACTITIONER USE "TWILIGHT SLEEP?"

BY

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"Safety first" has been the slogan of late in many walks of life; and certainly in medicine this must be the first call on duty's list. With every newly devised method of treatment and with every new drug, we must first know its dangers and how to avoid them. Then next comes along the question of the applicability of any method under consideration. Must the method remain in the hands of a chosen few? Does it require a hospital and the large staff and paraphernalia belonging thereto? Does it require any unusual ability and years of practice? For if it does, then the percentage of those receiving its benefits will certainly be small. It will be the object of this paper to consider these two questions, and in answering them answer the question in the title.

The safety of "Twilight sleep" has certainly been proved when administered by masters. Krönig and Gauss, in Freiberg have shown us in numerous reports that in over 6,000 cases, the fetal and maternal mortality is at least as low as in any of the other large good obstetrical clinics of the rest of the world.

There have been some observers working elsewhere with shorter series of cases who have not had as much success, notably Hocheisen, working in Bumm's clinic in Berlin, who in 1906 reported 100 cases. But these failures can be easily explained.

The drug then used was not stable, it easily deteriorated and was not standardized. Probably, even more important the method as started by Steinbuechel and perfected by Krönig and Gauss was not adhered to in detail. The many favorable reports that have appeared during the last few months in American medical literature, all speak for the safety of the method.

Is the method widely applicable? I freely admit that so far most of the work has been done in hospitals, but many men have tried it out, so that I feel sure that before long all men doing any considerable amount of obstetrics will feel able to superintend a "Twilight" case. A dark, quiet room is of great importance, and the average city hospital is the most difficult place of all in which to obtain this. I doubt if the dream of some for "Twilight" hospitals all over the country can ever come true; even then there will be some women who will find it necessary to have their confinements take place in their homes. The paraphernalia needed consists of the usual sterile linen, the usual forceps and other instruments that should be on hand at every confinement, a good assistant, or specially trained nurse, and the doctor always within easy call. The method does require a certain amount of extra experience, but only such as any physician can obtain by visiting a hospital, where the method is in general use.

Now how can the general practitioner use the method with success? Of course, we assume a thorough knowledge of obstetrics, as the *sine qua non*, in all this work; then after that he must have a knowledge of the physiological action of scopolamine and morphine, and be well acquainted with their toxicology and untoward action. The patient having been previously

examined and the measurements being normal, when labor starts the position is ascertained; then when there is at least three or four fingers dilatation of the os, and the contractions are returning every five or six minutes, then is the time to start treatment. This is all-important, for primary inertia of the uterus is the one contraindication to the use of scopolamine and morphine in labor. The patient is then placed in a quiet, dark room and the family and all visitors excluded. Of course it is best if the doctor can devote his entire time to the case, but if not, there must be continually present a younger capable colleague, or a nurse well trained in such work and thoroughly able to count the fetal heart beats.

These preliminary details having been attended to, the patient, now in active labor, is ready to receive the first injection which is to consist of morphine hydrochloride, grains $\frac{1}{4}$ and scopolamine, grain $\frac{1}{150}$. The scopolamine (hyoscyne) to be used is of great importance, and should be either a standardized tablet, freshly dissolved (such as made by Burroughs, Wellcome & Co.), or better still the ampules of scopolamine, stable, of Hoffmann-LaRoche Co. The patient is not disturbed for 30 to 60 minutes, with the exception of noting the fetal heart sounds. She will soon quiet down and possibly even doze between pains. Then, if the fetal heart sounds are as they were at the start and the patient's memory is still present, as it will be in practically all cases, then comes the second dose. This and all succeeding doses consist of scopolamine, grain $\frac{1}{450}$ and nothing else. From this point on, the fetal heart, the mother's pulse and general condition are watched most closely, and every little while the memory test is applied. This is done as follows: the patient is shown some object or

catheterized, or the temperature taken, and a few minutes later the act is about to be repeated and the memory of the previous similar act inquired into. If the patient does not remember, she is under the influence. If all is well then the slightest sign of returning memory means that another $\frac{1}{450}$ grain of scopolamine is to be given. This is kept up until labor is completed. The number of doses given is of no importance; over twenty injections have been given in an individual case without harm. The length of time that the head remains on the perineum is of little importance. If the patient is only just under the influence or on the verge of coming out, as the head is being born, then the extra pain at that moment may cause a distinct "Island of Memory." This can be avoided by adding a few drops of chloroform.

If the fetal heart sounds should become weak, or faint, or slow, or rapid, stop the drug at once and if needed promptly, deliver the baby with forceps, giving to the mother, if required, a few drops of chloroform. If any sign arises that is not understood at the moment and is not normal, stop the treatment. Safety must be the watchword, and how many cases are entirely amnesic is of no importance. There will always be a certain percentage of babies born oligopneic, that is, blue, not breathing, and with slow but regular heart sounds. They are all revived by the usual means of simple resuscitation, and the percentage so born grows smaller with experience and as we learn, not to expect the mother to be without pain, but simply without memory. Amnesia, not analgesia, is what we are striving for, though analgesia will be a frequent accompaniment.

These are the main points that the user of this treatment must consider.

I should like to add that, as these patients suffer from great dryness, but are, as a result of the treatment, not apt to ask for water, they should be given a drink every 30 minutes. If the labor is prolonged catheterization must be resorted to.

The baby delivered should be removed at once to another room and the placenta taken care of as usual. The mother is then allowed to sleep, which she will do for from one-half to six hours. Tears of the perineum will be less than with other methods, due to the prolonged second stage with its slow stretching of the pelvic floor. When tears do occur, they can be sutured at once, with or without chloroform, depending on the amnesic state of the patient at that moment.

There is just one small set of cases that I wish to speak of before concluding. A very few women will be amnesic, but extremely restless and make asepsis difficult. There are two methods by which they can be handled, one is to discontinue the treatment. This is safe, but unfortunate, for these cases are from the point of amnesia very successful. The other method is to have plenty of assistance to hold the patient. This too is safe, but not always possible.

I believe I have shown that "Twilight sleep" is safe, first, in the hands of the specialist, second in the hands of the general practitioner, if he will give the subject a little extra study and the patient the necessary care. By being thus safe in the home, as well as in the hospital, it certainly should grow to be generally used.

2 West 86th St.

In gonorrheal infections of the lower genital tract in women iodine is a valuable remedy. Applications of Lugol's solution are advised by Hartz.—*Med. Standard.*

SOME PERSONAL EXPERIENCES WITH SCOPOLAMINE AND MORPHINE NARCOSIS.

BY

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"Twilight sleep," as it has been called in the Freiburg Clinic, and used for the production of painless labor in childbirth, has been employed in general surgery for many years under the term, "preliminary narcosis." When scopolamine and morphine began to be utilized by German surgeons, a number of cases were reported in which no other form of anesthesia was resorted to, and the narcotic effect of the combination was in numerous instances gratifyingly successful. Within a few weeks after the appearance in the medical press of its employment, I too, began using this form of narcosis, and I well remember my first experience. It was a case of inoperable cancer of the uterus, in which I purposed to do a palliative operation at the home of the patient; and I gave directions to the nurse as to the administration of the drug. After the second dose of 1-12 grain of morphine and 1-180 grain of scopolamine had been administered, and at about the time when the third dose should have been given, the nurse called me on the telephone and informed me that the patient was very soundly asleep—indeed entirely unconscious—and desired to know whether the third dose should be given. I gave a negative answer and was soon at the bedside of the patient. There I determined that it would be entirely unnecessary to resort to inhalation anesthesia, believing that I could do the palliative operation intended under the effect of the narcotic already administered. And I was not disappointed. Never-

theless I confess I was incidentally alarmed as to the outcome, because the patient breathed like one under the full influence of morphine; nor did she rally entirely from its effect until about twelve hours had elapsed. On awakening, she remembered absolutely nothing of the operation, nor of anything that had occurred about her.

Subsequent to that experience I purposely did a few operations under scopolamine and morphine alone. Particularly do I remember one of these, because of the exceptional obesity of the patient, who had a very large strangulated umbilical hernia. While it was necessary at one part of the operation to resort to inhalation anesthesia, yet no more than about 1½ drachms of ether, by the drop method, were used to enable me to complete it.

Beside those operations purposely intended to be done under the influence of the narcotic alone, I have done a few where it was not premeditated to perform the operation under such form of narcosis alone, as was the case in the first instance narrated. As a rule, however, scopolamine and morphine narcosis is not desirable for this purpose. Yet as a preliminary narcotic, when conduction anesthesia or local anesthesia are to be made use of, I know of no agent which is more desirable. At the same time, I would sound a note of warning against its use in instances in which inhalation anesthesia is to be used, because I remember distinctly two instances of death of respiratory failure, which were, I believe, attributable to the use of scopolamine and morphine. Should one feel inclined to utilize this combination similarly to morphine and atropine, or morphine alone, preliminary to the use of ether, as has been done for many years, it is advisable to give but one dose about half an hour before

the intended time of operation. I would further suggest that the dose be from 1-8 to 1-6 of a grain of morphine with 1-200 to 1-150 of a grain of scopolamine hydrochloride, according to the size of the patient.

Pantopon and narcophin have been substituted for morphine quite extensively, but I have found that morphine in combination with scopolamine has given me a more satisfactory result than pantopon. With narcophin I have had no experience. I do not use the agents in the divided dosage, excepting when I intend to make use of conduction or local anesthesia; and then two and one-half hours before operation, I give the first injection; one hour later the second injection; and one hour later the third injection. If, after the second dose the patient is thoroughly under the influence of the preliminary narcotic—that is, if the patient cannot be readily aroused—the third dose is omitted. If, on the other hand, at the time when the third dose is to be given the patient is not appreciably under the influence of the drug and is larger and heavier than the average, I would advise increasing the dose of morphine. Instead of giving 1-12 grain of morphine with 1-180 grain of scopolamine, give 1-4 grain with 1-100 grain of scopolamine, or a dose corresponding, in the judgment of the physician. Although it occurs that patients, even with the increased dosage, are not fully influenced and do not sleep throughout the operation, still, in the greater number of instances it will be found that patients thus treated sleep throughout the operation under conduction or local anesthesia, as quietly as babes. Moreover, it will be found, particularly when the conduction anesthesia is by means of the spinal fluid, (lumbar anesthesia) that there is less

nausea than when no preliminary narcotic is used.

I would strongly advise the making of a fresh solution just prior to use in every instance. A prepared stock solution, even though it be prepared with mannite, is not to be relied upon. If one uses powders, each containing 1-60 of a grain, scopolamine hydrochloride, manufactured by Merck & Co., and 1-4 grain sulphate morphine, in separate papers, and at the time of intended employment mixes the two powders in a test tube with a sufficient quantity of water, and boils, a sterilized solution will be obtained which, being absolutely fresh, without having encountered any kind of decomposition, must prove thoroughly reliable.

I consider that this preliminary narcosis is to be especially preferred in neurotic individuals and in patients who may have organic disease of the respiratory and circulatory organs. Of course, it is understood that one must use judgment in the administration of these agents, just as with any others used in medicine. But from my personal experience I can say with conscientiousness that I would never again do without these aids any more than I would deprive myself of novocain and adrenalin in surgical work.

In mushroom poisoning remember that atropine is often an effective antidote. This is especially true when the symptoms simulate those of pilocarpine poisoning—and in these cases trouble usually begins early. When the appearance of symptoms is delayed for six to twelve hours or longer, atropine is usually contraindicated and treatment must be eliminative and supportive.

TWILIGHT SLEEP.¹

BY

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Introduction.—Twilight sleep may be best defined as a semi-narcosis, a mental state in which the patient has perception of incidents that may occur but no apperception. That is, she loses the recollections of incidents a short time after they have occurred, and the memories are not stored up in her higher brain centers. This Twilight state is induced by means of drugs, morphine and scopolamine, given in small repeated doses, just enough to keep our patient in an amnesic condition, but not enough to interfere with the progress of labor. There is probably no subject today which has interested, not only the public mind, but also the professional, so much as this so-called Twilight sleep.

History.—It is not desirable to give a long historical sketch of the morphine-scopolamine treatment as practiced for the last ten or twelve years. It will, perhaps, be necessary, however, to describe briefly the onset of the use of this method, in order to show its development and the refinement of its technic.

Morphine and scopolamine have been used extensively in obstetrics and surgery for the past ten or twelve years, not only abroad but also in this country. The bad and indifferent results which were at first obtained by the use of these drugs have been found to be entirely due to over-dosage, and to the use of impure and decom-

posed preparations. The original technic, as at first practiced, was to combine morphine and scopolamine, each time a dose of the medicine was given. The result of this was to cause a deep narcosis, and, as applied to obstetrics, to interfere with the progress of labor, and cause the birth of asphyxiated babies. The technic of this Twilight in the past few years has been studied and elaborated by numerous observers, especially by Prof. Gauss of Freiburg, and the only technic that today gives uniform results, is the technic as described by him. We may, therefore, disregard entirely any other method than so-called *Gauss Method* as practiced in Freiburg.*

Technic.—The technic as described by Gauss at the present time is about as follows:

The beginning of this treatment must be when the patient is definitely in labor, i. e., when the pains are recurring at intervals of five minutes, and we have one or two fingers dilatation of the cervix. It is absolutely contraindicated to begin the treatment until the patient is definitely in labor. We give then to a patient whose pains are recurring at regular five-minute intervals, an initial hypodermic dose of morphine-sulfate grain 1/7 and scopolamine-hydrobromide grain 1/130. In three-quarters of an hour to an hour, the scopolamine is repeated. One-half hour later, the patient is shown some familiar object, such as a watch, and fifteen minutes later than this her memory is tested. If, now, she has no recollection of having seen the object, she is considered to be in the so-called Twilight state. If she remembers the object at this time, she is given scopolamine-hydrobromide grain 1/400, and morphine-sulfate grain 1/12.

¹ Paper read before the Brooklyn Medical Society.

This dose practically always induces a condition of amnesia, or the *Twilight state*. From now on the patient is kept in this condition by repeated small doses of scopalamine, the average being approximately grain 1/400 every hour and a half. This technic, as described, is the so-called schedule of Ziegler. We must make it plain, however, at this point, that although this is an average schedule, the best results are obtained by individualizing each patient—i. e., we must determine by memory test, whether or not the patient is in the Twilight state, and use a minimum dosage to keep her in this condition. We have found recently that if we do not repeat the morphine, that we may still obtain our result, and our babies are not narcotized. It may be even possible to hold a person in the Twilight state for four hours without repeating any of the drugs. Individualization then, treating each case separately, is the keynote to success.

In order to induce Twilight with a minimum dosage of medication, there are numerous essentials which must be observed:

We must have our patient isolated in a quiet, semi-darkened room, and all sources of external irritation removed. It is also well to put cotton in the patient's ears, and possibly place a handkerchief over her eyes. No food is given during the process, but water administered freely during the early stages. The immediate effect of the first dose is to alleviate the suffering and to create a partial drowsiness of the patient. The effect is still more marked after the second dosage of medication; the patient's pains are decreased in severity, she sleeps at intervals between pains, arousing only when the uterine contraction takes place. The face is always somewhat flushed,

the patient may roll or turn in bed, and may show some external evidence of pain. However, the memory test is the all-important criterion as to whether our patient is in the so-called Twilight state. The so-called Twilight state may best be described by imagining three stages, from the first stage, where the patient has received no drugs, to the third stage, where she is deeply under.

First Stage.—Where the patient has pain, and the recollection of this pain is stored up in her memory, i. e., she has both perception and apperception.

Second Stage.—Where the patient has perception of pain and seems to suffer pain, but there is no apperception, and the memories are not stored up in the higher brain centers.

Third Stage or deepest stage of the narcosis. The patient shows no external evidence of pain, and there are no recollections stored in the memory, i. e., she has neither perception nor apperception.

The second stage, just described, is the point at which we should attempt to keep our patient, i. e., we should not abolish all external evidence of pain, but by frequent memory tests should determine whether the patient remembers the incidents as they occur. The first stage is really not a Twilight condition, and in the third stage the patient is too deeply under. In order to maintain this amnesic state, the memory tests are most important. Various other methods of determining the patient's memory may be resorted to, than the one described above. For instance, we may ask a patient how many hypodermic injections she has received. If one-half hour after each injection, we ask the patient how many hypodermic injections she has received, we may determine whether she is in Twilight. For instance, she may have had five hypodermics, and have recollection of only the first two or three. This proves to us that the patient is under. We may also test her

memory as to the number of times she has been examined, whether she has been cathertized, and various other incidents that go along with the labor. I might say here, also, that the intelligence of the patient has a great deal to do with your ability to maintain a Twilight condition with a minimum dosage. A memory test should also not be made too soon after showing the patient an object, or after some familiar manipulation. One-half hour is perhaps a better interval than fifteen minutes. If we do not make these memory tests at intervals, we are not absolutely certain that the patient is in an amnesic condition, and if we attempt to hold the patient too lightly under, she will have so-called isles of memory, and remember certain incidents after the labor is completed. If our patient has too many of these isles of memory throughout her labor, she may be able to practically frame-up the entire labor, and our Twilight is not a success. The abolition of all external evidence of pain on the part of the patient, is absolute proof that the patient is too deeply under. When this state is obtained throughout her labor, the result is an asphyxiated baby. If, however, she is kept lightly under, shows some external evidence of pain, the babies are born in a normal condition. I will briefly describe one case, so you may see how the dosage is given.

Mrs. S. had two previous children. She went into labor with her third baby at eight o'clock in the morning, and at nine o'clock her pains were coming at regular five-minute intervals, fairly strong. At this time she was given morphine-sulfate, grain $1/6$, and scopolamine-hydrobromide, grain $1/200$. At ten o'clock the scopolamine was repeated. At 10:45 the patient recognized

me as I came into the room, but from then on had no memory of events. At 10:50 scopolamine grain $1/400$ was given, and again at 11:45 and 12:45. She delivered spontaneously at two o'clock, a nine and three-quarter pound baby. The placenta was expressed $3/4$ of an hour later, and the patient immediately went to sleep. She awakened two hours later, and, upon questioning, said that her baby had not been born. The last thing she remembered was approximately 10:15, and during all of this time she had hard, frequent pains every two or three minutes, would complain somewhat with each pain, and yet at the end of the labor had no recollection of the events. This will show plainly what may be done by means of these drugs. Her baby was born in a normal condition, cried spontaneously at the end of three minutes, and was normal in every particular.

Indications.—What then are the indications for the use of this method?

Twilight sleep may be used in any labor which is progressing with regular, strong, uterine contractions, except under the following circumstances:

1. Primary uterine inertia is an absolute contraindication to beginning Twilight. If the patient is having irregular pains at intervals of 10, 15 or 20 minutes, these contractions being poor, the method should not be used. We may, however, wait in such a case until the uterine contractions are definitely strong and regular, and then use the method.

2. Marked pelvic contractions. This is a definite contraindication, as some operative procedure will be necessary. Cases of border-line pelvic contraction may, however, be given the Twilight, to procure dilatation of the cervix and a test of labor.

3. Hemorrhages either from placenta praevia, or accidental hemorrhages, are contraindications.

4. A dying or dead baby should be a contraindication, not from a medical standpoint, but because the patient, if ignorant, will blame the result on the method.

Operative Procedures Under Twilight.

—If then our patient is in the so-called Twilight state, there are numerous minor operative procedures which we may do in this condition. For instance, we may apply low forceps, without the patient having any recollection afterwards of the procedure; we may do bag introductions, perineorrhaphies, and manual dilatation of the perineum, without awakening the patient from her Twilight. In one toxic case, in which this method was employed, we gave the patient repeated colon irrigations, and after the labor she had no recollection of this having been done. This will give you a general idea of the possibilities of the Twilight, as employed scientifically.

Advantages to the Mother.—Granted then, that Twilight sleep is a possible scientific procedure, are there any advantages, disadvantages, or any dangers either to the mother or the child? As advantages to the mother, we may cite the following:

1. She has a painless labor in 90% of all cases, and even in the other 10%, although she has not complete amnesia, she has at least some analgesia. In a certain small percentage of cases, she may have no effect whatever from the drugs. In these cases it is important not to push the doses above the schedule in order to produce an effect. This will result only in asphyxiated babies.

2. The patient does not have the subsequent nerve exhaustion that comes after a prolonged hard labor. The patients awaken refreshed after their labor, and the

picture on the second, third or fourth day is entirely different from the ordinary labor. She feels better, stronger, wants to get up out of bed, and does not have any of the so-called shock of the confinement. This seems to me to be one of the great advantages of the Twilight method.

3. The milk secretion in these cases is absolutely better than after the ordinary confinement. We have kept accurate records of the babies' weights in my service at the Jewish Hospital, Brooklyn, and find that 64% of these Twilight babies are beyond their birth weight on the tenth day.

Comparing these statistics with the series before the use of Twilight, we find that in the latter cases less than 50% of the babies gain their birth weight by the tenth day.

4. Condition of the cervix. There is no doubt that with Twilight sleep we have fewer cervical lacerations, than by the old method—this we have proven absolutely in primiparae, by examining them on the day of discharge. The cervix instead of being lacerated in these cases, presents merely a small round opening. This lack of cervical laceration is explained in two ways:

a. The Cervix is softened by the drugs.

b. We have fewer forceps deliveries by Twilight than by the old method. We are not compelled in these cases to interfere with forceps, because our patient is in an amnesic state. We are all familiar with the primipara who is having hard labor pains, gets two, three or four fingers' dilatation, and cries for something to be done, she is nervous and excited, the entire family is excitable, and we are compelled to interfere, when we should otherwise wait. We have all of us done forceps under these conditions, where we should have waited for full dilatation. More than half of the forceps done today are certainly

either forceps of convenience or humanity forceps. However, by the use of the so-called Twilight sleep, we are able to wait longer, until we have full dilatation, and may be until the head is on the perineum, before applying instruments. In other words we may wait for some real indication before interfering.

5. We have proven statistically that there are less forceps operations since the introduction of Twilight, than by the old method, and even if we do have to do a forceps delivery, it is then only a low operation. A high or medium forceps through an undilated cervix should practically be a thing of the past.

6. We have also fewer perineal lacerations than by the old method.

7. Cardiac lesions. We have shown conclusively, that patients with heart disease may be delivered with less strain on the heart than by the old method. In our series, in Prof. Polak's service at the Long Island College Hospital, we had one patient with broken compensation, nervous, irritable and excited, in which we gave Twilight sleep. This patient could not lie down in bed, her lips were cyanotic and she was gasping for breath. After two doses of Twilight, the picture was entirely changed. All of her exhaustion had disappeared, and she was lying down in almost a recumbent position.

8. Toxemias. We have used this method in toxemias, and have found no ill effects. We think the patients are less apt to convulse under Twilight than by the old method.

9. Puerperal insanity. Statements have been made in the press today, to the effect that puerperal insanity follows Twilight sleep. In answer to this contention, I can only say that we have seen nothing of this nature in our series of cases, and it would

seem natural that if we prevent the nerve exhaustion due to labor, there must be less likelihood to insanity, than by the ordinary method. The Freiburg statistics also show that they have less insanity following Twilight.

10. Social side. There is an important social aspect to this method, which we cannot disregard. At the present time the only people who do not understand the prevention of conception are the poorer and ignorant classes, while middle and better classes are the only ones who practice extensively this prevention. If now we can prove to these people of the better classes, that they may have their babies with a minimum amount of suffering, are we not going to, in the end, procure a better race for the future generations? I have had numerous women apply to me, since the onset of this Twilight method, just to know whether it was an actuality, and they say that if they can have babies without pain, they are going to have larger families.

Disadvantages and Dangers to the Mother.—We have thus far found absolutely no danger of any kind to the mother. We have watched our patients closely under the Twilight, we have not seen any change in the pulse rate or respiration rate, especially if the morphine is not repeated frequently. One difficulty, or disadvantage, of the method, may be stated as the prolongation of the second stage of labor, especially in primiparae. There is no doubt that this stage is somewhat prolonged by use of this method, but not unduly so, and if our patients do not recollect these pains, is this really a disadvantage? There are numerous things which we may do to assist the second stage of labor, as follows:

1. We may make these patients bear down. We may assist them by taking hold

of their hands, make them bear down as with an ordinary delivery, and if the patient is in the Twilight state, she will have no recollection of it afterward.

2. A tight abdominal binder should be applied in all cases.

3. The thighs should be flexed on the abdomen.

4. Pituitrin may be used in any of these cases if the head is on the perineum, and there is no definite obstruction to the delivery. We have used Pituitrin rather freely in delayed cases under these circumstances, and we have seen no ill results.

5. Expressio Faetus may be resorted to.

6. Episiotomy is to be used if there is marked rigidity of the perineum.

Advantages to the Baby.—Gauss has shown conclusively that fewer babies die under this treatment than by the old method, and we find this to be true in our statistics, being undoubtedly due to lack of operative interference. The condition of the baby immediately upon birth is something which interests us all, and the condition of any given baby at birth may be included under the following four heads:

1. A normal spontaneous cry, or slightly delayed cry.

2. Oligopnea.

3. Asphyxia.

4. Still-born.

Inasmuch as 90 per cent. of all of our babies are included in the first two classes, we see that the danger to the baby is not great. This, of course, is true only if the treatment is given intelligently and with a minimum possible dosage.

Oligopnea means nothing more than delayed primary respiration and is not serious. If these babies are left entirely alone, the mucus wiped from their mouths, they will all cry spontaneously in time, and it is

not necessary to use oxygen or flagellation, except in cases of real asphyxia. We must not lose track of the fact that babies after ordinary labors may be born oligopnic or asphyxiated, and we should not be prone to blame Twilight on all of these conditions. The possibility of these drugs influencing the after-life of these babies, is practically nil. All of these drugs are eliminated within the first 24 hours, as has been shown by the Freiburg statistics, and their babies in Germany show at the end of three or four years an absolutely normal development.

Post-Partum Hemorrhage.—We have not found post-partum hemorrhage any more frequent after Twilight treatment, than by the old method, except where too much morphine has been given. Post-partum hemorrhage to my mind, whether under Twilight or not, is generally the result of improper manipulation of the fundus uteri following delivery. If the fundus is manipulated after the birth of the baby, a condition of partial separation of the placenta develops, and we have hemorrhage. The fundus should be watched and nature allowed to separate the placenta slowly by means of a retro-placental clot, the so-called Credé being resorted to only after complete separation.

Our Twilight patients are encouraged after delivery to become active in bed. During the first day they exercise regularly arms and legs, and roll from side to side in the bed. During the second day they are allowed to be more active, may sit up in bed for a part of the time, and under no circumstances are allowed to remain prone on the back for any length of time. From thence on the patient is encouraged to sit up in bed, become more and more active, and may get out of bed on the sixth or seventh day, if there have been no lacer-

ations and involution is progressing normally.

Bad Results of the Method.—There is no doubt that all of the bad results which have been reported due to this method, are due to an improper technic, or the administration of unstable preparations. If the patient receives only one dose of morphine, and is kept under Twilight by means of scopolamine, lightly given, the result should always be good. Bad results are due to one of the following causes:

1. The case is started too late in labor, and the attempt is made by large doses to procure the amnesia. Under no conditions should more of the drugs be given than the schedule noted above.

2. The case is started too early in labor, especially in the presence of primary inertia, necessitating a prolonged narcosis.

3. Too much drug may be given in an effort to suppress all external evidence of pain. The memory test should be the all-important criterion.

Drugs.—Just a word of warning should be given in regard to the drugs to be used:

Hyoscine is not identical with scopolamine, and should not be used in Twilight sleep. Many of the bad results, especially the presence of delirium can be ascribed to the use of this drug.

Narcophin may be used in the place of morphine, one-half grain of narcophin being equivalent to one-sixth grain morphine. The scopolamine which has given us the best results, is the so-called Scopolamine Stable of Hoffmann-LaRoche & Co. We are using this exclusively now, and ascribe our good results to its use.

Results.—In our first series of 50 cases done at the Jewish Hospital, Brooklyn, we procured the following results:

Complete amnesia 84 per cent.

Partial amnesia 10 per cent.

Partial failures 6 per cent.

Absolute failures none.

We may then say, in conclusion, that Twilight sleep is a reality, that by its means we can give 80 to 90 per cent. of all women in which it is used, a painless labor, that it has many advantages to the mother, practically no disadvantages to the mother, and that the fetal mortality is less than that by the old method. Also that it is a method which requires extreme patience on the part of the trained obstetrician, and a minute attention to detail. We must individualize each case to get good results. We do not claim that Twilight will be a panacea for all women in labor, as the great bulk of the people of the middle class, who are delivered in their private homes by the family physician, at a moderate fee, will not be able to demand the attention and detail on the part of a trained man to procure this treatment. However, in hospital practice, under the proper surroundings and given intelligently, Twilight sleep is a scientific reality, and will become used more and more as a part of the armamentarium of the expert obstetrician.

61a Seventh Ave.

Hemorrhage is one of the important early symptoms of cancer of the uterus, and may appear when the victim is in apparently perfect health. It may be only a trace following coitus or straining at stool.—*J. E. Gilcreest.*

Measles, by causing corneal opacities, ruins more eyes than all other causes combined, except squint. Yet this is easily prevented by daily bathing the eyes with warm boric acid solutions.—*The Medical Officer.*

RELIEVING THE PAIN OF CHILD-BIRTH.

BY

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From the early history of obstetrics till the present time there has been an attempt to prevent entirely or at least to mitigate the suffering of childbirth. With this object in view many remedies were used before the discovery of general anesthetics. With the discovery of general anesthetics it was believed that all the pains of childbed could be prevented; but it was soon found that in a general way they could not be employed with safety during the first stage of labor. On the other hand they could be safely used, if special precautions in their administration were followed, during the second stage of labor, especially during the passage of the child over the perineum.

About thirty-five years ago it was found that large doses of morphine given hypodermically would very markedly relieve pain during the first stage of labor. This practice became quite general. Before long it was found that the effect of the morphine was in many instances so injurious to the child that this treatment was abandoned. It was followed by the administration of many other remedies, especially chloral and bromide; but none of these methods of treatment gave sufficiently good results to warrant their continuance. Recently "Twilight sleep" has been introduced and quite extensively tried in many maternity hospitals throughout the world. In many places it has been given up, due very possibly to an imperfect knowledge either of how to give it, or of the results to be expected. The medical and lay press have been full

of marvelous results, as well as of pronounced failures, and possible bad secondary effects on the mother and child; still the treatment continues for it is apparently the best method so far discovered to mitigate the pains during the first stage of labor.

I do not propose to enter into the discussion as to the merits of the different remedies employed; but believe that narcophin and scopolamine are preferable to morphine and hyoscine.

For those who have had no experience with "Twilight sleep" it is well to remember that in a very large majority of cases when the patient is well under the influence of the remedies she feels the labor pains during their height; but as soon as the pain ceases she passes into a semi-conscious state from which she can easily be roused and will answer questions intelligently; only to lapse immediately into the semi-conscious condition. Not infrequently she may become very excited during pains and this should not cause the attending physician to give too large doses of the remedies.

Finally it should constantly be remembered that the use of "Twilight sleep" is no contraindication to the administration of a general anesthetic if it should become necessary to resort to instrumental delivery. In fact, forceps should not be used without the use of general anesthesia for "Twilight sleep" is apt to make the patient very unruly.

After delivery the patient usually goes to sleep and when she awakens has no recollection of her delivery.

"Twilight sleep" does not prevent labor pains; but when properly and successfully given it makes the patient forget them as soon as they have passed. From all the evidence we have at hand, it would seem justi-

fiable to conclude that "Twilight sleep" has come to stay.

It requires the constant attendance of a physician and nurse during the entire labor. Under these conditions it can be as well carried out in the patient's home as in the best equipped hospital.

54 West 71st Street.

"THE USE OF SCOPOLAMINE IN LABOR."¹

BY

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It is certainly most unfortunate that the first comprehensive descriptions in this country of this form of treatment appeared in the lay publications, for not only did it create a strong prejudice against it within the medical profession, but it also tended to reflect upon the professional reputations of such eminent scientists as Krönig and Gauss, who, after most painstaking efforts extending over a period of eight years, have succeeded in developing an accurate and well defined technic in the administration of scopolamine-morphine in connection with labor.

It was but natural that the vivid descriptions of the experience of women treated by this method, as presented by the lay reporters, would appeal to all women in the child-bearing period, and the medical profession in this country was very soon confronted with a problem which it was not prepared to solve.

Our profession has invariably proved itself equal to all occasions and in this in-

stance it is to be regretted that a number of our foremost obstetricians were unduly hasty in expressing their opinion of this method through rather unusual channels without thorough investigation.

We all know that a legitimate amount of conservatism is absolutely essential on the part of the medical profession, so that a proper equilibrium may be obtained, and the public be protected against the results of over enthusiasm. Those who are familiar with the history of medicine are fully conversant with the fact that most new methods of treatment, especially those which have been radical departures from routine and accepted standards, have always brought forth sharp protestation and even condemnation on the part of those who refused to progress with the advances made in science.

The life of Semmelweiss surely supplies a sad chapter in the history of modern medicine! Few physicians of the present day are aware of the stormy protest created by Oliver Wendell Holmes when he enunciated the theory of contagion in puerperal fever. Meigs, the foremost obstetrician of that day, preferred to attribute the infection to accident or Providence of which he could form a conception, rather than to a contagion of which he could not form any clear idea, at least as to this particular malady!

The discovery of anesthesia, probably the greatest blessing to suffering mankind, was looked upon with derision, contempt and neglect, so that its practical application was retarded nearly half a century.

That nitrous oxide produced unconsciousness was demonstrated by Sir Humphrey Davy in 1799, yet we find that not until 1844 was there any definite attempt made to adopt it!

¹Read by invitation before Buffalo Academy of Medicine, Oct. 21, 1914.

It is hardly credible when one reads that Faraday, who demonstrated that ether had properties similar to nitrous oxide as far back as 1818, abandoned his investigations, and left it for Long and Morton as late as 1842-1846 to rediscover the practical application of ether. The attitude of the medical profession toward this new discovery can best be judged by the historical statement made by Warren of Boston when he said after finishing the first surgical operation under ether anesthesia, "Gentlemen, this is no humbug."

In reviewing the history of scopolamine in relation to obstetrics, we find that it too is passing through the same process of evolution common to all new methods of treatment. It is but natural to expect, at this day, that a great deal of opposition should arise against it. Not only is it condemned by those who think that they have had some experience, but even by those who have made no attempt to give this method a fair trial.

To Steinbuchel must be credited the introduction of scopolamine in obstetrics. In 1902 he reported his experience in a series of 20 cases. It seems that notwithstanding the importance of this new therapeutic measure, the medical profession did not give it very serious consideration.

However, this report prompted Krönig and Gauss to make further investigations in order that they might thoroughly study the subject, and in 1906 Gauss published the results of his observations in 500 cases in which he used a combination of scopolamine hydrobromide and morphine to induce a state of semi-consciousness during labor. This mental state he termed "Dämmer-schlaf" (Twilight sleep).

To obtain this state clinically the attending physician must have a concrete con-

ception or mental picture of what he is seeking to accomplish. In Dämmer-schlaf the patient is able to perceive but not apperceive. The patient should always be able to answer commonplace questions, even though the responses be somewhat delayed, indicating a sluggish mental state. Between pains the patient should rest quietly or fall asleep. During a pain the patient may moan or even cry out, move about aimlessly and entirely forget its occurrence as soon as it subsides. In other words, an incoordinate subconscious mental state must be evenly maintained and any deviation from this will invariably lead to undesirable results.

The studies of Gauss stimulated general interest in the subject and very soon numerous articles appeared from the various obstetric clinics both in this country and abroad. Some investigators, chief amongst whom were Krönig, Zweifel, Beruti, Newell, etc., confirmed the work of Gauss and credited to this method all that he claimed for it. Others, especially Hocheisen, not only denied its efficacy but even attributed to it elements of danger to both mother and child.

As a general rule, it may be stated that no form of treatment will meet with the same success in the hands of all who use it, even though the technic followed be the same. What then should we expect to accomplish with a form of treatment in which the technic and dosage varied with each and every investigator?

A study of the literature reveals the fact that there are two distinct groups opposing this method of treatment. (1) Those who have tried the method occasionally, based upon no definite technic, with results correspondingly unfavorable. (2) Those who have given this method a fair trial but

have not followed the technic as outlined by Krönig and Gauss.

In 1906 we see the beginning of a strong controversy upon the efficacy of this treatment between two of the great German clinics. In September of the same year, Hocheisen (Bumm's clinic) in a report based upon his experience in a 100 cases, violently attacked this mode of treatment, claiming it to be extremely dangerous to both mother and child, and in order to more fully support his contentions he cited 18 deaths in various surgical operations, in which scopolamine had been used, directly attributed to this drug. He further contended that the danger of post-partum hemorrhage is increased, labor considerably prolonged and the necessity for operative interference more frequent. He concludes that scopolamine is a dangerous poison, with uncertain and varied action, and that its use is unjustifiable in obstetrics.

It is however interesting to note that his own results were fairly favorable, notwithstanding the fact that Gauss later proved that the technic followed by him was entirely different from that formulated at Freiburg. At the same time Gauss demonstrated that the solutions used were unstable and quickly deteriorated. Hocheisen's technic further materially differed from Gauss' in that he used much larger doses of scopolamine (1-70 to 1-100 of a gr.) and that treatment was begun too late and therefore in many cases there was not sufficient time for amnesia to be obtained.

Being fully aware of the important role which technic and accurate interpretation of the mental state of the patient play in this treatment, we hesitated in instituting it heretofore. In May of this year we were, however, fortunate in obtaining the services of Dr. Kurt E. Schlössing, one of the

assistants at Freiburg, and therefore decided to investigate the use of scopolamine in labor.

In introducing this treatment our object was, not only to study the scientific aspect of it, but also to ascertain whether or not the benefits derived by the patient, even should the treatment result successfully, were commensurate with the special care and effort so necessary on the part of those in attendance. In forming our conclusions, the opinions of our patients, especially the more intelligent ones, were taken into consideration. They nearly all agreed that this form of treatment robs labor of its agonies, creates an improved mental attitude and instills within them a feeling of confidence, so much so, that the anxiety of labor is eliminated.

At this juncture it would even be speculative to suggest that this form of treatment may have a prenatal influence upon the child. If it be true, as we are led to believe, that prenatal influences have a direct bearing upon the child, then surely an improved mental state on the part of the mother is not only most desirable, but essential.

An argument very often advanced against this treatment is that if labor is to be made painless, we are interfering with a physiological process, and many further contend that the mother will lack the tender feelings for her child, and that the dignity of motherhood will eventually suffer.

It is questionable whether or not the pain accompanying labor is entirely physiological. May it not be one of the relics left us by our ancestors? In prehistoric days pain probably acted as a forewarning to the woman, so that she should stop her wandering to anticipate the birth of her child. It is, therefore very likely that the pain ac-

companying labor is biological, rather than physiological. We may wonder, moreover, if in our present stage of civilization motherhood will suffer because of the alleviation of pain incident to childbirth.

Before taking up the physiological action of scopolamine and morphine, it would not be amiss to touch upon the physiology of labor pains and our aim to modify or alleviate these by the use of drugs.

We must differentiate between objective pain by which we understand uterine contraction, and subjective pain, which is that sensed by the mother. Any method which has for its object the elimination of subjective pain, must under no circumstances interfere with objective pain.

It is a well known fact that the pain caused by uterine contraction does not affect all women alike. Every experienced obstetrician has occasionally seen a patient in whom labor has progressed to a stage of complete dilatation without any physical evidence of pain. We must, therefore, conclude that the degree of subjective pain depends upon the sensitiveness of a given nervous system. It is equally well known that the degree of sensitiveness can be modified by the use of many therapeutic measures.

The central nervous system is the seat for the perception of pain. Impulses are conducted to and from it. The degree of pain depends both upon the ability of the cortex of the brain to receive and upon the nerve trunks to conduct. If, by any method, we are able to minimize either the perceptive power, or the degree of conductivity, pain may be markedly diminished, or even entirely abolished.

From the above it may be seen that the progress of labor does not depend upon subjective pain and that this may be di-

minished or eliminated without interfering with the normal progress of labor. Labor essentially depends upon the degree of uterine contraction for its successful termination. The purpose and object of this method of treatment is primarily to obtain a mental state in the patient by which the receptive and perceptive powers are diminished without the complete loss of consciousness. Clinically this is best accomplished by the judicious use of the combination of scopolamine hydrobromide and morphine.

It is not my intention to discuss the various physiological manifestations produced by these drugs upon the central nervous system, for I feel certain that their effects are too well known to all. I shall only attempt to call attention to the effects produced by these agents in their relation to obstetrics.

The action of scopolamine is chiefly upon the central nervous system. It quiets the cerebrum and diminishes the perception of pain, without apparently influencing the contractility of the uterus. Labor, therefore, may progress uninterruptedly and the patient may not only fail to recollect these pains, but may even be entirely unaware of them.

Clinical types.—Clinically these cases may be divided into three distinct groups: (1) Those patients in whom we obtain both amnesia and analgesia, that is abolition of memory and diminution of pain; (2) patients in whom we obtain analgesia without amnesia; (3) cases which entirely fail to respond to this treatment.

Technic.—In order to obtain the best results with this method, certain cardinal requisites must be strictly observed. It is absolutely necessary that the patient be so placed that she will be free from all disturbing influences. A physician or nurse

should be in constant attendance. The effects of the drug should be carefully watched so that it may be repeated at proper intervals. Light in the room should be so arranged that the patient is not disturbed by it. The fetal heart sounds should be carefully studied. The solutions used should be obtained from reliable chemists, and should be accurately standardized. It should be perfectly clear, never having any sediment or flocculence, and should preferably be put up in ampules each containing the quantity required for a single injection.

For purposes of accurate statistics, special charts were printed, indicating the important points to be noted. Dr. Schlössing assumed full charge, so that the technic followed by him was identical with that of Krönig and Gauss at Freiburg.

Our rule is to admit to the hospital only those patients who are in active labor. We, therefore, have no means of judging precisely when labor sets in, nor the average duration of the first stage.

Treatment is begun only when the patient shows definite signs of active labor. The patient is then put to bed in a dimly lighted room, and an initial dose of 0.00045 gm., or approximately 1-135 of a grain of scopolamine hydrobromide is injected intramuscularly. This is preceded by a hypodermic injection of one-half grain of narcophin. The effects are now carefully observed with special reference to pulse, respiration, pupillary reaction, fetal heart sounds and frequency and intensity of uterine contractions. A second injection of 1-400 of a grain of scopolamine is given about one hour after the first one. About half an hour after this injection memory tests are brought into play. The patient is shown some object, such as a doll or watch

and a short while later she is asked whether she remembers having seen the particular object in question, or she may be asked whether she remembers having received a hypodermic injection. Any test of memory will do. The repetition of injections is now primarily gauged by the degree of amnesia present, this being the guiding point throughout the treatment. The interval between injections is approximately one to one and one-half hours. The average normal case requires from five to seven injections, although at times it may be necessary to give only two or three, or as many as twelve or fourteen.

At the completion of the first stage, with the presenting part on the perineum, one c. c. of pituitrin is often given to hasten delivery. In using pituitrin in these cases, especial attention should be paid to the fetal heart sounds, for there may be danger of inducing asphyxia in a child which is already oligopneic. As soon as the child is born, the cord is quickly ligated and severed and the infant is removed to another room. The mother is made comfortable and usually falls into a deep slumber, to awake two to four hours later often in complete ignorance of the fact that she has already given birth to her child.

REPORT OF CASES.

Case 1.—Mrs. E. K., aged twenty-five years, para iii, admitted in labor, June 16, 1914. Cervix three fingers dilated, head unengaged, membranes ruptured, cervix thick.

First injection, 6.30 p. m., scopolamine grain 1/160, morphine grain one sixth; restlessness quite marked. Second injection, 9.30 p. m., scopolamine grain 1/400, morphine grain one sixth; still quite restless; pulse 108, color normal, respiration 28; fetal heart 140; frequency of pains, three minutes; duration of pains, one-half minute. Third injection 10.55 p. m., scopolamine grain 1/400.

Patient delivered spontaneously 11.22 p. m., oligopnea of child, lasting three minutes. Placenta expelled spontaneously. Mother very restless, had to be held down during pains. Condition, following day, good. Case only partially

successful. Mother did not recollect the time of birth of the child, but remembered having had pain.

Result.—Amnesia without analgesia.

Case 40.—Mrs. S. G., aged twenty-three years, para i, admitted July 14, 1914. Five fingers dilatation, head engaged, cervix thin, membranes intact.

First injection, 5.40 p. m., scopolamine grain 1/160 and morphine-narcotine meconate grain 1/2. Pulse 100, face flushed, respiration normal; frequency of pains, every three minutes, duration of pains three-quarters minute; fetal heart 150; patient quiet. Second injection, 6.40 p. m., scopolamine grain 1/400; pulse 84, face flushed; fetal heart 150. Third injection, 7.55 p. m., scopolamine grain 1/400. Fourth injection 8.55 p. m., scopolamine grain 1/400; fifth injection, 9.45 p. m., scopolamine grain 1/400. 10.20 p. m., morphine-narcotine meconate grain one-half. Sixth injection, 10.25 p. m., scopolamine grain 1/400.

Patient delivered, 10.45 p. m.; oligopnea, lasting five minutes; cord around the neck.

Result.—Amnesia with analgesia.

Case 80.—Mrs. M. K., aged thirty years, para ii, admitted August 11, 1914. Cervix dilated four fingers, head engaged, membranes intact; pulse 80, color normal; fetal heart 144; pains every three to four minutes, duration, one minute.

First injection, 6.00 p. m., scopolamine grain 1/135, and morphine-narcotine meconate grain one-half; pulse 88, color normal; fetal heart 130; pains every three to four minutes, duration one-half minute; patient quiet. Second injection, 7.00 p. m., scopolamine grain 1/400; pulse 90, respiration 24, color normal; pains every three minutes, duration one-half minute; patient very quiet. Third injection, 8.30 p. m., scopolamine grain 1/400. Fourth injection, 9.30 p. m., scopolamine grain 1/400. Pituitrin, one cc. injected 10.30 p. m., scopolamine grain 1/400. Fifth injection, 10.30 p. m., scopolamine grain 1/400; 10.30 p. m., pituitrin, 1 cc. injected. Pituitrin 1 cc. repeated 1.30 p. m.

Patient delivered spontaneously of normal child, 11.45 p. m.

Result.—Complete amnesia with marked analgesia.

Case 120.—Mrs. S. S., aged twenty-six years, para iii, admitted August 29, 1914. Cervix three fingers dilated, membranes intact, head engaged, pain every three minutes, pulse 76, color normal; respiration 24; fetal heart sounds 136; onset of labor pains 7.00 p. m., duration of labor pains, one-half minute; frequency of labor pains every three minutes.

First injection, 7.35 p. m., scopolamine grain 1/135, and narcophin grain one-half; pulse 76, color flushed; respiration 24; fetal heart sounds 136; frequency of labor pains every five minutes; duration of labor pains one-half minute, patient quiet. Second injection, 9.00 p. m., scopolamine grain 1/400; pulse 76, color flushed; respiration 26; fetal heart sounds 136; frequency of labor pains every three minutes; duration of labor pains one-half minute; patient quiet. Third injection, 9.45 p. m., scopol-

amine grain 1/400. Fourth injection, 10.20 p. m., scopolamine grain 1/400.

Patient delivered of normal child, 10.30 p. m. Placenta expelled spontaneously.

Result.—Amnesia with analgesia.

Case 160.—Mrs. G. T., aged twenty years, para 1, admitted Sept. 24, 1914. Cervix four fingers dilated, membranes intact, head engaged, pulse 80, color normal, respiration 24, fetal heart sounds, 140; onset of labor pains 10.00 a. m., duration of labor pains every one-half to one minute; frequency of labor pains every five minutes.

First injection, 11.00 a. m., scopolamine grain 1/135 and morphine grain one-sixth; pulse 90, color flushed; respiration 26, fetal heart sounds 140; frequency of labor pains every four minutes; duration of labor pains, one-half to one minute; patient quiet. Second injection, 12.00 a. m., scopolamine grain 1/400; pulse 72; color flushed; fetal heart sounds 146; frequency of labor pains every four to five minutes; patient quiet. Third injection, 1.00 p. m., scopolamine grain 1/400. Fourth injection, 1.55 p. m., scopolamine grain 1/400. Fifth injection, 2.55 p. m., scopolamine grain 1/400. 3.15 p. m., pituitrin, 1 cc. was injected. Sixth injection, 3.55 p. m., scopolamine grain 1/400. 4.10 p. m., pituitrin 1 cc. injected. Seventh injection, 5.05 p. m., scopolamine grain 1/400.

Patient delivered spontaneously of normal child, 5.30 p. m.

Result.—Amnesia with analgesia.

CASE 200.—Mrs. S. G., aged twenty-five years, para ii, admitted in labor Oct. 25, 1914. Cervix two fingers dilated, moderately thick, membranes ruptured, head engaged. Pulse 80, respiration 26; fetal heart sounds 130; onset of labor 7.00 p. m., duration of labor pains one-half minute; frequency of labor pains every five minutes.

First injection, 2.00 a. m., scopolamine grain 1/135 and narcophin grain one-half; pulse 80; color flushed; respiration 24; fetal heart sounds 130; frequency of labor pains every four minutes; duration of labor pains one-half minute; patient quiet. Second injection, 2.50 a. m., scopolamine grain 1/400; pulse 82; color flushed; respiration 24; fetal heart 120; frequency of labor pains every four minutes; duration of labor pains one-half minute. Third injection, 3.50 a. m., scopolamine grain 1/400. Fourth injection, 4.50 a. m., scopolamine grain 1/400. Fifth injection, 5.50 a. m., scopolamine grain 1/400. Sixth injection, 6.50 a. m., scopolamine grain 1/400. Seventh injection, 7.50 a. m., scopolamine grain 1/400. Eighth injection, 9.00 a. m., scopolamine grain, 1/400. Ninth injection, 10.30 a. m., scopolamine grain 1/400. Tenth injection, 12.15 p. m., scopolamine grain 1/400. Eleventh injection, 2.10 p. m., scopolamine grain 1/400. Twelfth injection, 3.15 p. m., scopolamine grain 1/400.

Patient delivered spontaneously of normal child 3.50 p. m. Placenta expelled spontaneously. Good case with several "isles of memory."

Result.—Analgesia, partial amnesia.

When this treatment was first instituted, many difficulties were encountered. Being

an experiment, with final results uncertain, we hesitated to inform our patients, and therefore lacked their cooperation. Dr. Schlössingk was not quite familiar with our type of women, and consequently could not accurately gauge the dosage and intervals. For our solutions we had to depend upon a local chemist, who at best sent us preparations which quickly deteriorated. Our accommodations at that time were such that it was impossible to devote a special room to this work, the patient being treated on the regular delivery tables. As a result of these obstacles our results in the early cases were not too encouraging. We felt, however, that this method of treatment deserved a further trial. Arrangements were then made by which the treatment was carried out as near as possible to that described by Gauss at Freiburg. The percentage of successful cases immediately increased, and it was now quite evident that this mode of treatment deserved all that Krönig and Gauss claimed for it.

Drugs.—The scopolamine used is that prepared by Hoffmann-LaRoche Chemical Co., according to the method prescribed by Straub. This consists in the addition of mannite ($C_6H_8(OH)_6$) to the scopolamine. This prevents deterioration of the solution, and standardizes its physiological action.

Morphine and other opium products were tested carefully, but their depressing effects upon the respiratory center, chiefly in the child, led Straub to construct a synthetic opiate which he called narcophin (morphine-narcotin-meconate). This preparation seems to have the same sedative action as morphine without the depressing effect on the respiratory center. Narcophin is prepared by Böhringer Sohne of Mannheim.

Before presenting our own statistics, we shall give a brief resumé of the work done

by Beruti, as shown by his report of 1909, based upon a series of 600 cases. In that series, we find that the results obtained were greatly influenced by the degree of intelligence of the patients and also by their environments and surroundings. He found that the percentage of successful cases varied with the different classes of patients. It appears from his report that all his patients were divided into four classes, which varied from those who occupied private rooms, with special attendants, to those which correspond to our general wards. His percentage of successful cases was highest in first class patients, and proportionately decreased in the lower classes.

Number of Injections.—Smallest number one; largest number 22.

Dose of Scopolamine.—Smallest, 1-400 of a grain; largest 1-9 of a grain. This last large dose was given to a patient who was addicted to morphine and veronal and extended over a period of 43½ hours. Another patient received 1-15 of a gr. over a period of 59 hours. Both these cases were old primiparae 35 and 39 years, respectively.

Average Number of Injections.—Three and three-fourths with total average of scopolamine of 1-50 of a gr. Morphine only rarely repeated. Light motor restlessness, 42 cases or 7 per cent.; marked restlessness (requiring restraint) 7 cases or 1.33 per cent.

Duration of Labor.—First stage: In 287 primiparae, 16 hours 44 minutes; second stage, in 285 cases, 2 hours and 38 minutes; third stage, in 290 cases, 33 minutes. Total duration of labor, 19 hours and 22 minutes. (Gauss, 18 hours and 23 minutes. Kleinertz, 19 hours and 48 minutes.)

In 191 cases, or 31.83 per cent. the placenta was expelled spontaneously. In 402

cases, or 67 per cent., the placenta was expelled by light abdominal pressure, or Credé. Manual extraction was performed in 7 cases, or 1.16 per cent.

In this series there were four cases of excessive hemorrhage. One of placenta praevia, one of premature separation of the placenta and two cases of atony of the uterus.

The average amount of hemorrhage by actual weight in 497 cases was 382 grams. This is considerably less than what is considered physiological bleeding during childbirth, which is 500 grams.

Beruti further classifies his cases into three groups depending upon the degree of amnesia and analgesia. (a) Those cases which show marked analgesia, with or without amnesia (*Schmerzlosigkeit*) in this group there were 390 cases, or 65 per cent. (b) Those cases in which amnesia is present with or without analgesia. In this group there were 327 cases, or 54½ per cent. (c) Those cases which failed to respond to this treatment. Of these there were 63 cases or 10½ per cent.

Maternal Mortality.—Three women died. One from placenta praevia and two from sepsis, which were confirmed at autopsy.

Effects on Child.—Total number of children born 609 (9 twins) of which 102 or 16.94 per cent. were oligopneic. Of these 80 were born oligopneic, and 22 became so a short while after birth. None of these children died.

Mortality of Children.—Twenty-five children died up to the third day. Ten were premature infants—one miscarriage—seven children died before labor set in. Of the latter, five were macerated, one with many coils of cord around the neck and shoulders and one of unknown cause. Seven children died during the first three days. In one

the cord was prolapsed in another there were many coils of cord around the neck and the remaining were cases in which forceps were used producing cerebral hemorrhage. From the third to the ninth days only three children died. All of these were premature.

Beruti concludes that this treatment does not harm the mother, nor does it harm the child in any way. It does not influence the physiological process of labor. This method is the only one in which 80 per cent. of mothers can go through labor without pain and often without the knowledge of it. It is only sad that such a valuable form of treatment should be condemned by doctors and laymen before having given it a proper and thorough trial with the proper technic and care.

The above statistics are of special interest for Beruti did not confine himself to the use of any single preparation, but attempted to investigate the comparative efficacy of the different preparations produced by several well known chemists. In a few cases the well known combination of morphine and hyoscine was used. The repetition of morphine with each injection of hyoscine was not only unnecessary, but had a tendency to interfere with the progress of labor, and also endanger the life of the child, thus making its use unsafe.

Our experience with this form of treatment consists of a series of 220 consecutive cases in the obstetric services of the Jewish Maternity and Lebanon Hospitals. As previously stated the cases were subdivided into three groups with the following results: (a) 183 cases or 83½ per cent. in which there was complete amnesia with analgesia; (b). 17 cases or 7½ per cent. in which there was analgesia without amnesia; (c) 21 cases or 10 per cent. in which the

treatment failed to produce the desired effects.

We shall now attempt to emphasize those phases associated with labor and the postpartum period which are of special interest to the obstetrician.

Pain.—Pain is less intense and apparently of shorter duration, for it is only the acme of the pain that the patient is probably conscious of. However, if closely observed, we find no alteration in the actual time of uterine contractions. Apparently the intervals between pains are lengthened, but in reality they are about the same. The outward manifestations of pain, such as facial expression and outcry are markedly diminished.

Duration of Labor.—Since our patients are admitted only when in active labor, we have no precise means of judging its duration. Most authors agree that labor is moderately prolonged. Siegel states that there is a delay of about one hour for the first stage, and 33 minutes for the second. The average duration of labor in our series, in primiparae, was $8\frac{1}{2}$ hours, figuring from the time of admission to delivery. The average time that the patient was under the influence of scopolamine was $6\frac{1}{2}$ hours. The longest period that a patient was kept under was 29 hours, the shortest $1\frac{1}{2}$ hours. The average number of injections was five; the highest number 18, the lowest, one.

Personally, I believe that the first stage of labor is actually shortened. This is most likely due to the softening effect that narcophin and scopolamine have upon the cervix and lower uterine segment. The second stage, however, is positively delayed. The patient being in a semiconscious state does not utilize her abdominal muscles to any great advantage.

Hemorrhage.—No appreciable alteration in the amount of hemorrhage was noticed by us, and Beruti by actual weights in over 400 cases proved that bleeding was somewhat diminished.

Perineal Lacerations.—The second stage being somewhat delayed, stretching of the perineum is more gradual, and lacerations are therefore less likely to occur. Siegel reports six first degree lacerations in 78 spontaneous deliveries in primiparae or $7\frac{1}{2}$ per cent. Harrar and McPherson report 37 lacerations in 100 cases treated with scopolamine as against 45 lacerations in 100 cases, not so treated.

Effects on Child.—One of the principal reasons advanced against this form of treatment was that many children were born asphyxiated with a resulting increase in the infant mortality.

We must distinguish between asphyxia and oligopnea, a condition which is often seen in babies delivered by this method. This condition is best explained by Gauss and Holzbach. They believe it to be due to the fact that scopolamine depresses the peripheral filaments of the vagus (in intrauterine life) and when the child is born, it requires a long period to accumulate a sufficient quantity of carbon dioxide to stimulate the respiratory center in the medulla. Clinically this is illustrated by the fact that scopolamine babies, when born in a state of oligopnea, breathe and sometimes cry immediately after delivery, following this there is a drop in the heart rate and the breathing becomes exceedingly shallow, and within the succeeding 5-10 minutes the child gradually resumes normal respiration and good heart action. That this condition is not dangerous is best proven by the fact that these children do best when not inter-

ferred with, by any artificial methods of resuscitation.

In our series 186 babies, or 84½ per cent. cried spontaneously. There were 34 cases or 15½ per cent. in which there was varying degrees of oligopnea present. The total infant mortality was six deaths or 2.7 per cent. One was a premature infant with spina bifida. The second died from melanaeonatorum; the third from subdural hemorrhage; the fourth from edema of the glottis, 12 hours after delivery; fifth from congenital transposition of the viscera; sixth, direct cause unknown. However, in this case patient received an overdose of narcophin.

Operative Procedures.—In this series labor had to be terminated artificially in 23 cases, or 10½ per cent. In two patients the breech presented and delivery was accomplished by bringing down a foot. In 21 cases forceps was used; of these three were medium and 18 low. One case was a nephritic with marked edema, and it was deemed advisable to terminate labor quickly. In three cases forceps was indicated because of persistent occipito-posterior positions. In one case labor was terminated because of an existing severe cardiac condition. In three cases labor was prolonged, the fetal head apparently meeting with some obstruction at the pelvic outlet. In thirteen cases labor was terminated on account of a tedious second stage. In the last mentioned cases, the perineum was bulging with caput showing and practically all that was necessary was extension of the head with the forceps blades. The instruments were then removed and labor allowed to terminate spontaneously.

Anesthetics.—In the most recent report by Ziegel of Freiburg in a series of over 200 cases, ethyl chloride by inhalation was

administered as a routine during the stage of expulsion. This is done in order to further obviate any recollections of pain.

It has been found that in order to carry out this form of treatment successfully, the patient must be constantly kept under the influence of the drug. Should she at any time during the course of the treatment partially regain consciousness, she will not only recollect the pain which she actually experienced, but will reconstruct the entire progress of labor. Such isolated periods of relative consciousness are termed by Gauss "Isles of Memory." These are most apt to occur during the stage of expulsion. In our series we did not find it necessary to resort to the use of a general anesthetic for this purpose.

Ether was the anesthetic used when artificial delivery was performed. The use of chloroform for any purpose during labor was abandoned by us about three years ago. The patients were very quickly narcotized, taking the ether very readily and consuming very small quantities of it.

Contraindications.—With the possible exception of kidney complications, we find no contraindications for the use of this method. Zweifel even goes so far as to recommend it in eclampsia and reports three cases treated successfully.

Endocarditis was present in four cases with no untoward effects as a result of this mode of treatment. On the contrary we believe that this procedure is especially efficacious in labors associated with cardiac diseases for it tends to eliminate, not only the mental anxiety, but the actual physical strain induced by the patient's efforts to help labor along.

Convalescence.—It is interesting to note how little these patients are physically affected by labor. The exhaustion that usually

accompanies labor in primiparae is entirely eliminated. They usually appear very restless the following day, for instead of having passed the previous day in pain and wakefulness, they had gone through labor in a state of semi-consciousness without any undue physical exertion. There were 163 primiparae in this series, and in our experience this treatment is best suited to first labors.

In this series one patient developed postpartum psychosis on the fourth day. Within the same week two more cases occurred in my obstetric service at Lebanon Hospital. Owing to my absence from the city scopolamine was not given in these two cases. I consider it most fortunate that this method was not used in two of the cases for I feel certain that the mental derangement would be attributed to the use of this drug. This naturally would tend to discredit this mode of treatment, resulting most likely in its discontinuance. That this coincidence would create a most peculiar situation was more so impressed upon me by the fact that when the attending neurologist was asked to see these patients, he immediately inquired as to whether they had had "Twilight."

Another interesting illustration of this kind occurred in a child which was born oligopneic. Failing to improve, resuscitation by the catheter method (the only method used by us) was resorted to and continued for two hours at which time the heart action ceased. It was early noticed that the cardiac impulse was on the right side. Permission for autopsy was finally obtained. The findings were very unusual. A large congenital opening was present in the left muscular portion of the diaphragm. The stomach, small intestine, greater part of the large intestine and spleen were in

the thoracic cavity. Both lungs were collapsed and the heart was situated on the right side. The liver occupied the entire abdominal cavity. Without autopsy, this death would undoubtedly have been attributed to the use of scopolamine. It has always been the fate of any new method of treatment to ascribe to it many complications that would have taken place ordinarily, and it is only through mere accident that we occasionally are able to account for them otherwise.

We have also observed that the tendency toward engorgement of the breasts is notably diminished in these cases. This is probably due to the action of scopolamine on the peripheral secretory nerves.

CONCLUSIONS.

1. Standard solutions are absolutely essential for the success of this treatment.

2. No routine method of treatment should be adopted. Each patient should be individualized. This method does not merely consist of repeated injections of scopolamine at prescribed intervals, but the mental state of the patient should be made the guiding point. A subconscious state must be evenly maintained.

3. Facilities should be such that the patient is not unduly disturbed.

4. A nurse, or physician, must be in constant attendance.

5. This form of treatment is best carried out in hospitals, although there is no reason why it cannot be accomplished in well regulated private homes. However, if for any reason, the physician attending a patient at her home, does not see fit to institute treatment early in labor, he surely can utilize this method in the second stage, and still save the woman a great deal of unnecessary pain. That this may be accomplished was demonstrated in eight cases in whom treatment was instituted at the end of the first stage of labor. All of these cases had marked analgesia with complete amnesia.

6. It does not affect the first stage of labor, but the second stage is somewhat prolonged.

7. Pain is markedly diminished in all cases, while amnesia is present in the greatest number of patients, and labor is not painless as is generally supposed.

8. This treatment does not in any way interfere with any other therapeutic measures which may be deemed necessary for the termination of labor.

9. Fetal heart sounds must be carefully watched. Sudden slowing calls for immediate delivery, if possible, or treatment must be discontinued.

10. Oligopnea was present in $15\frac{1}{2}$ per cent. of cases. However, normal respiration was very soon established and no ill effects were observed.

11. No change in the course of the puerperium was observed, and convalescence progressed very smoothly in our entire series.

12. Women of a higher grade of intelligence are best suited to this form of treatment.

13. This treatment is best carried out in primiparae or in multiparae with tedious labors. It has no place in short labors.

14. This is an ideal form of treatment in patients suffering from cardiac disease.

Finally, every experienced obstetrician is fully aware of the fact that the number of births showing anomalies, such as premature rupture of the membranes, incomplete dilatation of the cervix, abnormal presentations and primary inertia are on the increase. It is equally well known that women who follow a profession requiring a superior mental development, have more difficult deliveries. The demands made by hard work, or by social obligations upon the modern women in our large cities, are so great that their nervous systems are constantly overworked. What we consider a normal nervous system now rarely exists, and therefore pain is not well borne. In our opinion subjective pain incident to childbirth, serves no purpose in nature, but

is rather an unnecessary result of an unchangeable natural law that all severe muscular effort is accompanied by pain. The metabolic end products of muscular activity are irritating to nerve ends causing pain. Thus, we see severe pain accompanying the hurried muscular peristalsis of the bowel in ridding the system of injurious material, the excruciating colicky pain caused by the propulsion of a biliary or renal calculus, and finally the agonizing pain incident to expulsion of the fetus from the uterus. In trying to relieve these pains, we are not in conflict with a natural purpose. If pain can be relieved, it is the duty of every physician to do so, and no effort should be spared to accomplish it. The comparative safety with which this drug may be used in competent hands, not only justifies but compels every obstetrician to give this form of treatment a fair trial, and convince himself as to its merits. It is only a varied experience by competent men that will tend to settle this extremely interesting subject. It is the duty of the medical profession to set the public aright on this most important question. We must approach this subject both from a medical and humane aspect. The modern woman refuses to have many children. The great instinct for an offspring is gradually dying out. One of the principle reasons for this is the fear of pain associated with labor. If by any method of treatment pain can be eliminated one of the aspects of race suicide may be eradicated. For our part, we believe that this method of treatment robs the woman of the agonies of pain accompanying labor, and in addition instills within her a feeling of confidence which materially aids her in passing through this trying ordeal.

To advocate or condemn a given therapeutic measure, without a thorough personal investigation is truly unscientific, and is not in accordance with our modern conception of the underlying principles of progress and civilization.

Supplementary Note.

Six months have passed since "Twilight sleep" has been re-introduced in this country and generally practiced after the method outlined by Krönig and Gauss. We believe that during this period we have had ample time to study the true merits of this form of treatment and to observe its advantages and disadvantages, its effects upon mother and child so that we now know its true indications and limitations.

In this issue we present a general argument for this method, based upon a study of 220 cases, giving a statistical report with emphasis upon some of the more essential points at the same time outlining the definite technic followed by us. In presenting the subject our aim was to give it a general consideration in the *broad*er aspect and our conclusions arrived at are only applicable, in the *broad*est sense, to a large series of cases. However, in considering this method of treatment from the standpoint of the individual patient, certain features present themselves which the physician is in duty bound to explain to his patient.

It is generally understood by the laity as well as by a goodly number of the profession that with this method of treatment, labor is made painless, when as a matter of fact it is the rare exception for such a state to exist and that in the greatest number of cases pain is only moderately diminished while in a certain number of cases pain is imperceptibly modified. The degree

of pain, however, bears no direct relation to the amnesia. A patient may suffer a great deal of pain during the progress of her labor and still have no recollection of it the following day and therefore, the patient's testimony regarding this method is valueless. It is very important that prospective mothers should be familiar with this fact so that statements of women who have received this form of treatment are by no means conclusive.

In about ten of our patients we observed persistent, severe headache during the entire puerperum and very little relief could be obtained by any form of medication. Again in a number of patients we noticed the loss of the power of concentration affecting more or less the mental quality of the individual temporarily.

As for the dangers to the child, we believe that this has been very strongly pointed out in the paper. Fully 15 per cent. of the children were born oligopneic thus showing that the drugs used affect the respiratory center of the child. That this condition may prove dangerous to the child unless the fetal heart sounds are most carefully watched, is very obvious. These and other less important factors should be explained to each and every patient before she finally decides upon "Twilight sleep."

That "Twilight sleep" is not a panacea for all labors is now definitely proven. It has no place in short labors thus eliminating the majority of multiparae and is only indicated in prolonged and tedious labors both in primiparae and multiparae.

Finally in order to derive all the possible advantages from this form of treatment it must be practiced very cautiously, and its use adopted only in selected and suitable cases.

62 W. 89 St.

SOME REMARKS ON THE ADVANTAGES OF SCOPOLAMINE AND MORPHINE IN THE MANAGEMENT OF LABOR.

BY

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That it is the mission of medicine to alleviate pain and ameliorate suffering whenever and wherever possible is an axiom and not debatable. That childbirth is in the vast majority of instances attended by pain and suffering severe enough to merit consideration must also be admitted without discussion. That pain of whatever nature can not be considered physiological even if its causative factors often are, is equally true. Any measure, therefore, having for its object the relief of pain incident to childbirth, commands a careful study and a thorough investigation; if proven to possess all that is claimed for it, does not endanger the life or health of mother or child, and does not interfere with the normal processes of labor, it should be universally adopted and encouraged.

From 1902, when Steinbuchel first described the use of scopolamine and morphine anesthesia in obstetrics to the present day, sufficient work in that line has been done to enable one to draw conclusions. Had all the reported work been carried out thoroughly and scientifically according to the method and manner described by Gauss, the verdict would, we believe, be in favor of the method. Unfortunately much of the work was done in an indifferent manner, with naturally indifferent, and very often unfortunate results, and hence the divided opinion of the profession on the subject.

From a study of 272 cases carried out at

the Jewish Maternity Hospital under only moderately favorable surroundings, and under the guidance of Dr. K. E. Schlossingk, recently, of the Freiburg clinic, we have come to the following conclusions:

As to the Efficacy of the Method. In 78 per cent. of cases the treatment results in a complete abolition of memory and a marked diminution of pain. In other words, it produces a complete amnesia and a high degree of analgesia, not only does the patient not remember anything that occurred after she comes under the influence of the drugs until several hours following delivery but her behavior during labor indicates only a very mild degree of suffering. In 12 per cent. of cases the method produces a marked degree of analgesia and only a partial amnesia, the patient faintly remembers the birth of the child and some incidences of the labor, although admitting she suffered but little. In 10 per cent. of cases the method fails to produce the desired effect. This fact we should like to emphasize more strongly, for on the recognition of it the safety of the method very largely depends. Since the sensitiveness of the nervous system varies in different individuals as does the susceptibility to drugs, some cases will not be influenced unless carried beyond the point of safety. Any case, therefore, that cannot be brought under after four or five injections, or where the drug causes a marked alteration in the fetal heart sounds, should be considered unsuitable for the treatment and abandoned without further trial. The failure to recognize this fact is in a great measure responsible for the unfavorable results reported from some quarters.

2. *As to its safety.* With judicious use and with proper precautions the method is safe and free from danger to life and health of mother or child. The fear of asphyxiation of the child, post partum hemorrhage and psychosis in the mother have no foundation, and if any of these accidents do occur, it is not because of the method, but because the method could not prevent them.

3. *As to its interference with the normal termination of labor.* Labor is moderately prolonged by the treatment, the delay occurring at the perineal stage, and is not due to inhibition of uterine contractions, which remain as strong as before, but to the fact

that the patient being in a semiconscious condition cannot utilize her abdominal muscles to advantage since the contraction of the abdominal muscles is largely of voluntary origin. The stage of cervical dilatation, however, is shortened. For these reasons, we consider the method essentially a first stage method and one that finds its greatest usefulness in primiparae and multiparae where a long labor is expected. It should not be employed if the labor is too far advanced or where a short labor is promised. Another reason, and in our opinion, a more important one for not employing the method in short labors is that if the child is born before the effect of the morphine, or whichever preparation of opium is used, is worn off, or if the anesthesia has been crowded, as one is tempted to do in these cases, it is likely to be asphyxiated. For the same reason we should warn against repeating the morphine when labor is expected to terminate within three hours, nor should the anesthesia be pushed to complete analgesia, for nothing is to be gained from it, and it only endangers the child. The patient should be kept lightly under, and if deemed advisable ethylchloride or chloroform given for the last expulsive pain.

Our statistics, moreover, show that there are other advantages from the method by no means unimportant. The patients appear rested and free from shock and exhaustion even after a very prolonged labor, they are able to leave their beds much sooner than otherwise, and that has enabled us to cut their stay at the hospital by two full days. Cervical tears we never see, and the number of perineal lacerations is greatly reduced.

It has eliminated the use of high forceps entirely and reduced the medium forceps to a very small figure, although it has increased the percentage of low forceps deliveries slightly. Beach found that the "Twilight" children show an average greater gain in weight for the first two weeks of life and ascribes it to a better secretion of the breast in mothers who have undergone the treatment.

The disadvantages of the method are entirely with the accoucheur and not to the mother or child. It requires his presence at the bedside from the time that the treatment is undertaken until the completion of

labor. Not so much because of any danger, but to keep the patient evenly under anesthesia on a line midway between consciousness and unconsciousness, for, if she is allowed to go above that line in several instances the patient will have several so-called "Isles of Memory," and will be able to draw a picture of her labor in her mind and thus lose the benefit of the treatment. If, on the other hand, anesthesia should go below that line, labor will be delayed unnecessarily and the child somewhat endangered. Any attempt at a schematic treatment as to time and dosage must result in too many failures and too many accidents; individualization here, as in any other treatment, is essential for success.

The contraindications to the method are: 1. Primary inertia. 2. Expected short labor. 3. A marked disproportion between the fetal head and mother's pelvis, necessitating a major obstetrical operation. 4. Placenta praevia or accidental hemorrhage. 5. Absent or doubtful fetal heart sounds. 6. Active eclamptic convulsion where a rapid delivery is deemed advisable. The treatment is exceptionally useful in neurotic women with a low power of resistance and sufferers from heart disease. It is also of service in threatened eclampsia, although it slightly raises the blood-pressure.

THE USE OF MORPHINE AND SCOPOLAMINE IN LABOR.

BY

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"Twilight sleep" is the term applied to the first method of conducting labor so that by the hypodermic use of well defined doses of morphine, and particularly of scopolamine, or hyoscine hydrobromide, the suffering of

the patient is diminished to a certain degree and the recollection of the pains experienced during labor is lost after the labor has been completed. This method is supposed to follow no definite plan as regards the number of doses required, the number depending upon the individual reaction to the drugs mentioned. The reason for this is that if too much morphine be used, or too many doses of scopolamine be given, so that among other things the pain almost disappears, labor is prolonged and an absorption of the drugs on the part of the fetus goes on to such a degree that its well being and life are seriously threatened. It can be seen that the method must be used by one who understands it thoroughly, who knows enough of the method to not overstep the boundary of safety, and by one who gives to each labor much of his personal attention and presence, or has associated with him a physician or nurse extremely well informed by experience.

The reports as to the value of the method are conflicting, the majority, however, finding the method of great value. In discussing the practical side of a procedure so delicately balanced as the ideal method of "Twilight sleep," one is compelled to wonder what great reward falls to the patient and physician for the expenditure of so much time and the use of such a delicate method, associated, if the greatest care be not used, by certain well recognized risks.

The ordinary labor, proceeding in the ordinary fashion, does give the patient pains, in a large number of instances, very severe pains, but the patient is at all times in a position and condition to give such aid as the physician may require, an aid often given to a very marked degree by the voluntary contraction of the ab-

dominal muscles. This aid which is of the greatest value is very frequently lost, even with the best method of conducting "Twilight sleep." The character of the pains, the regularity with which they occur and the character of the patient's outcries give us, in many instances, a fair conception of the progress of the labor. This help is often lost even in the ideally conducted "Twilight sleep," so that frequently repeated examinations, vaginal or per rectum, are necessary to keep the attending physician informed of the progress of events. In the ordinarily conducted manner the patient may suffer very much from the pain, but is tractable, obedient and fairly comfortable and free of annoyances between the labor pains. In "Twilight sleep" the patient is restless, often to a most annoying degree, complains very frequently of thirst, and cannot be always easily managed. In the ordinary method of conducting labor it is of the greatest value to use chloroform in the very last portion of the second stage, keeping the patient sufficiently under to relieve her of pain, yet always reserving the power to let the patient rouse sufficiently so that she may when requested, if need be, aid us by pressure of the abdominal muscles. This most valuable aid is lost in "Twilight sleep," for the patient, though she may remember little afterwards, is not tractable in many instances, cannot always exert voluntary contractions, and in a large number of cases is so restless, and is so little under control that chloroform must be used. So here again the "Twilight sleep" fails to give to the patient and the physician that freedom from restlessness and that obedience to requests, the value of which no experienced obstetrician fails to recognize. Unless the "Twilight sleep" dosage be carefully gauged and adapted to the

peculiarities of each case, it requires considerable effort and a certain amount of exertion to make the newly born breathe regularly for the first few minutes or hour after labor, and to bring them back to the normal color. This adds a decided responsibility to the physician and nurse at the completion of labor, the period when one is alive to the possibilities of hemorrhage or bleeding, before, during or after expulsion of the placenta. Another, and I believe, important annoyance belonging to even the most ideal method of "Twilight sleep" is that the use of morphine and scopolamine, even in the smaller doses, increases the proportion of cases which demand the use of forceps in the second stage, and while it is a simple thing in a hospital, where practically most of the cases of "Twilight sleep" have been treated, to have all the requirements for a forceps application ready in a very few minutes, such is not the case in conducting the labor in a private home. To be sure, the advocates of "Twilight sleep" say that the method is truly applicable only in hospitals, or in private sanatoria especially adapted for this purpose. This means that all cases where this method is to be used should be treated in a hospital. This is really no objection so far as we are concerned, for I should like to see the day when every first baby is born in a hospital or a sanitarium.

Now I wish to mention an objection to the extremes of "Twilight sleep" which I consider important. It has been my experience in the last two or three years that the judicious use of pituitary extract in small and repeated doses, never more than a $\frac{1}{3}$ or $\frac{1}{2}$ ampule at a time, has shortened the duration of labor and has most decidedly diminished the necessity in a large proportion of cases, for the use of forceps in the

second stage. I consider this advantage so great and of such obvious value to both patient and physician that I should be loath to introduce any procedure which would interfere with the valuable influence of pituitary extract, and I can say that my experience bears me out, that the use of morphine and scopolamine, except in the very smallest doses, does interfere with the valuable action of pituitary extract, and that the successful coadministration of pituitary extract and the drugs which induce "Twilight sleep"—meaning by this the successful use of pituitary extract—disturbs the supposedly ideal course of "Twilight sleep." I do not wish to minimize the value of morphine, scopolamine or hyoscine in very small doses for the diminution of pain, and if used in this way and at the right time, they give the patient a decided degree of relief, but if these drugs be used to the extent necessary to secure the complete "Twilight sleep" effect, then the valuable effect of pituitary extract is markedly diminished or entirely nullified.

Now it is a simple thing for the enthusiastic and experienced follower of the complete "Twilight sleep" method to dilate on the comforts it adds to the patient and the fact that the patient, after the labor is over, has no recollection of her annoyances, but it is a difficult thing for us to understand what boon we are giving to womankind, when the expenditure of time and energy is taken into consideration and the risks to the baby are noted. Certainly one can scarcely speak of shock as an accompaniment of the average labor presenting no complications in its course, that is unassociated with a much prolonged first and second stage, unassociated with post partum hemorrhage, unassociated with the use of instruments or other obstetrical manip-

ulation, and while the average patient does suffer pains which pituitary extract does increase, yet they are not followed by anything in the way of shock.

There are few things in medicine more wonderful than the difference which just a few moments make during the labor, referring here particularly to the way the patient feels towards the end of the second stage before chloroform is administered, and the complete sense of relief, and the delight and joy which the mother feels when she awakens from chloroform and hears the infant crying. I find the patient at this time to be so aroused or happy and so full of vigor that it is a difficult thing to hold her in proper check. We spare the patient no shock by even the finest form of "Twilight sleep" in normal cases. Only time will tell whether the method's advantages are sufficiently great to make it worth while. The character of the men who are practising this procedure certainly speaks in favor of the method, but like many things which add to the comfort of the patient, even an occasional accident is a blow of sufficient importance to make one doubtful as to its adoption as a routine plan.

We are just now at a stage where it is the physician who is being questioned by his patients as to the value of the method, and it requires the greatest fairness and honesty to tell private patients both the good side and the possibly injurious side. The larger number of cases in this country have been hospital cases. Only when the method has been thoroughly tested by a large number of private patients and only when the laity has been able to judge for itself for a number of years, will the medical profession be able to decide whether it is worth while. To be a permanent adjunct to ob-

stetrical procedure, a method must do something which is truly valuable and that too, without the addition of any risks. I have yet to be convinced that this method does this.

In truth, it may be said that with the use of small doses the modified method may be practiced by experienced physicians without adding very much to the length of labor, with a moderate increase in the number of forceps cases and with a certain increased risk to the welfare of the fetus. Experience and statistics fail to show that even this method does enough in the way of benefit to make even these slight risks worth the while. Such small doses do not give the complete "Twilight" effect but do increase the patient's comfort and diminish the sense of pain. The occasional use of small doses of morphine plus atropine, or hyoscine or scopolamine during labor is in itself no new departure. I have used these methods for years in prolonged labors with patients tired or exhausted, waiting for a favorable development without forceps or for a more favorable period in which to use them. If used in the first stage, which may be prolonged thereby without producing harmful effects, and if used only rarely in the second stage this careful method may be of service. When I contrast the advantages which the judicious use of repeated small doses of pituitary extract furnishes to the obstetrician; how it shortens the duration of labor in primiparae and especially so in multiparae; how it removes the need of forceps in practically all so-called atonic cases; how it brings the second stage to a safe painless conclusion with the coadministration of chloroform as the head passes over the perineum, I am forced to conclude that "Twilight sleep" has no attraction for me in my private work.

THE ANNOTATOR

Does Our Present Educational System Prepare for a Citizen's Duties?—

Professional teachers have always been subjected to baseless criticism, and much of it has been directed to trivial and non-essential details. Indeed the very character of the complaints is an acknowledgment of the good already accomplished and the desire to make the system more nearly perfect according to popular ideals. In the mass of literature on the subject, there is little discussion of the fundamental purpose of education. We are often told that the system aims to make good citizens; that is, the pupil is to be taught his public duties and how he can do them. As a matter of fact, every course seems designed to make the student a better wage earner. Indeed some educators are now announcing that their sole purpose is the practical one of turning out pupils ready to make their own living and not a word as to training them to do the right things to keep the social organism healthy. This American democratic conception is different from that of certain old European Universities, which have been devoting themselves to training aristocrats for public affairs. They were created in the days when men were trained to their livelihood in a species of apprenticeship and by the workers themselves. There was nothing practical in school education except the acquisition of knowledge of supposed benefit in public employment. Both systems are wrong and each is appropriating to itself the purposes and methods of the other. In time they will be the same. That is, our defect has been neglect of those things which train the citizen to his public duties. To be sure, we try to explain forms of gov-



ernment but not a word is said of the biologic basis of political parties, and we inculcate the idea that a citizen's sole duty is to vote. Few educators seem to realize that at least once in every generation it has become one's sole duty to fight to preserve his home. Nor do our school teachers have the remotest idea of why wars come on about once a generation. When the attack is made, no one is ready, and no one knows how to prevent wars which have, therefore, become inevitable. What has this to do with medicine? Merely this, our medical schools are un-social almost anti-social in their failure to do their part in explaining the physiologic causes of war, and their utter neglect of the duty of training physicians in their professional public duties in case war does afflict us. Let us pause in our efforts to make doctors selfish wage earners and try to make them able to perform the more altruistic public duties of public defense. As we have said before, no one should be given a license for private practice unless he shows knowledge and ability to do something in war. Unless of course some physical infirmity exists.

Incompetent Generals.—The warring nations in Europe seem to be having a hard time finding competent generals, that is, men who can carry out the plans of campaign devised by the general staff. In spite of the fact that each general has his own staff to help him, it is said that very many are showing hopeless inability to utilize their own assistants. As we have already explained, it is no longer



vitality necessary for a general to be young. He is not expected to have the ingenuity and flexibility of youth—the things which brought success to the commanders of old. He is not to think out new campaigns but to obey orders according to well known rules of warfare. There is no way in peace times to find out who can do this. In every other walk of life appointments to executive positions are confined to those who have proved their ability. Nothing but war can demonstrate a general's fitness, hence selections must be made on some other basis, usually family or political influence. President Lincoln had to appoint those who were recommended and he spent the rest of his time trying to get rid of them and to find those who could do the work. We now hear of wholesale retirements of commanders in nearly all the European armies,—men who have not made good. Many of these are merely sons of their fathers and have not inherited the genius which created the family name. The greatest disasters seem to have come to those armies which have confined high rank to more or less incompetent nobles or royalty and we are now witnessing the creation of a new nobility anointed by great men of the middle classes. There is no evidence of the much discussed democratization of Europe. The nobility is merely recruiting itself with the successful men of lower social layers. It has always done this. The offspring of these men will be preferred in the future, in the hope that heredity will transmit the paternal qualities. Social layers have thus always existed in Europe based on heredity and perhaps always will. Napoleon had to create an upper layer to replace the useless one derived from remote great men, and the Republic was faced with the same problem years ago. Its aristocrats however, were excluded from the army because they were royalists who could not be trusted to uphold republicanism, yet their conduct rather indicated lowered intellectuality. Students of heredity are quite likely to find much evidence in this war, that by Mendel's law, the qualities which made a man great, may entirely disappear from his posterity. And that conversely many a middle class man may show great ability inherited from an unknown ancestor. We are not so sure as we once were that great abilities arise de

novo in poor stock. Such men almost always arise in families already noted as being above the intellectual average.

The Passing of Fumigation.—Neither physicians nor laymen seem to realize that the gradual abandonment of fumigation as



a part of terminal disinfection is an epoch in the science of preventive medicine. The use of evil smelling gases to kill disease germs was an inheritance from the time when we all thought that the facts as to contagion were best explained by the theory of some kind of gaseous miasm or mal-aria. Certainly some good came of our old methods, but careful laboratory experiments have shown that it was due to other causes and that our disinfecting gases did not disinfect. The proved facts of science are now replacing the crude deductions of the dark ages of medicine, and the dark ages were so recent that we still see their remnants. Even yet few of us fully appreciate the necessity for knowing the exact effect of definite amounts of each germicide. Standardization must be accomplished by one means or another or disinfection becomes a ceremony. The two substances we have depended upon, sulphur dioxide and formaldehyde are now known to be more or less worthless except in amounts which cannot be applied in practice, except to kill rats and insects. They are being abandoned in favor of methods which really accomplished the end in view. Of course we must know where the living germs really are or we will waste our ammunition trying to kill dead enemies.

Terminal disinfection is a permanent necessity but we are constantly changing its methods as we find out what is infected and what will disinfect it. Some physicians have imagined that the abandonment of fumigation was a criminal neglect of terminal disinfection and have most unwisely criticized this new departure of health departments. To insist upon useless methods is only blinding our trusting patients to the real dangers they may harbor in the family. Those who play upon popular delusions or ignorance by burning a few candles in the

vacated sick room, and then utterly neglect the carried convalescent, may soon find themselves facing legal proceedings. We have shown that it is not wise or politic for the family physician to be the reformer and neglect established methods, but it is infinitely worse to oppose health authorities who must adopt new methods proved to be better. Of course every reform must go through the fires of bitter criticism and perhaps this is beneficial, for it burns out the useless impurities of a method and leaves the indestructible truth, but it is high time that we put an end to our habit of condemning things simply because they prove that we have been wrong. Family physicians need not take the initiative but they must not prevent progress as we know several to have attempted.

The War Tax on Tooth Pastes is another instance of legislation injurious to public health, and further proof, if any were needed, of the utmost necessity for us to send competent medical men to our law-making bodies, as is the custom in Europe. In most countries, lawyers are more or less completely excluded from legislatures and restricted to their legitimate

duty of interpreting the laws made by the people. Here we assume that a training in laws of the past is the only qualification for making laws of the future. As a result our judicial system is admittedly the worse in civilization. Our representatives are so ignorant of public needs that they have not the slightest knowledge of the far reaching evils of oral sepsis or the immense importance of mouth cleanliness and the consequent necessity of bringing such toilet articles as tooth pastes within the reach of everyone. Instead of taxing such things, public welfare would seem to demand that they be given a bonus. We are, therefore, glad to see the protest so vigorously voiced by Dr. H. L. Wheeler, of The New York College of Dentistry. Under his chairmanship, a committee of prominent dentists and physicians has been formed to cooperate with similar committees in other cities to inform Congress of

the ultimate harm that will certainly result from this tax. There would not be such need of instruction if more physicians were in public life to head off vicious legislation. Farmers have no difficulty in getting money to preserve the lives of their pigs, and it is horrible to think that some of it will be obtained from a tax which jeopardizes the lives of children. The whole medical profession stand firmly back of Dr. Wheeler and his associates in their efforts to point out to Congress that a tax on tooth pastes will seriously embarrass and handicap one of the most important movements for health.

"Properly Selected Cases."—Articles describing a therapeutic agent almost invariably assert that it is successful in practically all "properly selected cases," but the authors forget to tell us how to select them. Few of us are so situated that we can limit our practice and even if we did know what the authors meant, it would not help us with the improper cases



which decline to be benefitted by the remedies as suitable for the proper. The conviction has begun to dawn on us that the authors themselves do not know. If a case gets well it was proper for the treatment, if it dies it was improper. Is it not time to be a little more explicit in describing the two classes?

There is a wealth of material for this purpose, and much of it is already tabulated waiting for some one to re-classify it. In no disease is it more important than in tuberculosis. We are constantly hearing of cases cured in one location or sanitarium, which got worse in others, but not a word as to the reasons except an implication that the "other shop did bad work." They say that every place has its failures which get well elsewhere. Now let us know more about them, so that we can send every case to the place best for it. Every sick man is a properly selected case for some kind of treatment somewhere. Let every physician realize that we have come to the point where it is more important to know what kind of a patient the disease has got, than to know what kind of a disease the patient has got. In only those few diseases for

which we have specifics is an accurate diagnosis the basis of drug therapy. In spite of all our advances, the rest are treated a good bit alike. We help them cure themselves and after they are well, we frequently are puzzled how to label them. Even our death certificates are not as accurate as we would wish. But we can describe the type of men who get well or die, even if we must confess to more or less ignorance of their ailments.

THIRD REPORT OF THE COMMITTEE IN CHARGE OF THE AMERICAN FUND FOR BELGIAN PHYSICIANS.

The Committee in charge of the American Fund for Belgian Physicians are pleased to report that the amount collected up to the time of going to press aggregates well over \$1,200. An additional donation has been forwarded to our Belgian brethren through the offices of the Rev. J. F. Stillemans, President of the Belgian Relief Committee, making a total of \$1,150 that we have been able to place to date in the hands of the doctors of devastated Belgium. To every one who has so nobly responded to our appeal for the needy physicians of this sad and sorrowing nation, we extend our heartfelt thanks and the earnest wish that you may receive fourfold in return. It is a source of great satisfaction to the Committee that so many different individuals have contributed to this Fund. The widespread interest shown in the undertaking indicates a sympathy and approval that is certainly gratifying. It cannot fail to gladden the hearts of the Belgian physicians to know that the aid thus tendered, humble though it may be, nevertheless represents the sympathy and good will of many different contributors from all over the United States and Canada.

Following is a list of contributions received since the December issue of AMERICAN MEDICINE went to press:

Amount previously acknowledged	\$1,035.00
E. C. Arthur, A. M., M. D., Nelson, B. C.	5.00
Dr. A. L. Mourse, Sawyerville, Ala.	.50
Miss H———, Chicago, Ill.	5.00
Miss M. L. Tuxbury, Saco, Me.	7.00
Dr. W. C. Wolverton, Linton, N. Dak.	5.00
20 Kind-hearted Gentlemen & Dr. C. O. Fothergill, Elgin, Iowa	6.25
Dr. S. Kohlenbach, Columbia, Ill.	1.00
Dr. H. G. Frame, Willard, Mo.	1.00
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Dr. D. C. Darrow, Moorhead, Minn.	5.00
Dr. A. J. Stowe, Rush City, Minn.	1.00

Dr. C. R. Mitchel, Richland Center, Wis.	\$ 1.00
Dr. C. D. Conkey, Superior, Wis.	1.00
Dr. J. H. McNeil, Sao Paulo, Brazil.	5.00
Dr. W. Z. Flower, Gibbon, Minn.	5.00
Dr. A. Shimonek, St. Paul, Minn.	5.00
Dr. P. F. Gaunt, Oconto, Wis.	2.00
Dr. Arthur N. Collins, Duluth, Minn.	1.00
Dr. Gerald R. Moloney, Belle Plaine, Minn.	1.00
Dr. H. Bennett, New Lexington, Ohio.	1.00
Dr. Ottmar Von Schallern, Ripon, Wis.	1.00
Dr. R. E. Seaman, Milwaukee, Wis.	1.00
Dr. John Eldon Hynes, Minneapolis, Minn.	10.00
Drs. Post & Coleman, Barron, Wis.	10.00
Dr. A. Mason Randall, Ashby, Minn.	1.00
Drs. Vadheim & Paulson, Tyler, Minn.	2.00
Dr. A. M. Thomas, New York City	15.00
Dr. Leo W. Chilton, Canyon City, Oregon	2.00
Dr. L. J. Friend, Abbotsford, Wis.	2.00
Dr. J. H. Frank, Anoka, Minn.	2.00
Dr. Edgar A. Vander-Veer, Albany, N. Y.	5.00
Silver Bow Medical Society, Butte, Mont.	25.00
Dr. H. W. Smith, Roodhouse, Ill.	1.00
Dr. W. H. Banks, Hudson, Wis.	1.00
Dr. F. C. Spates, St. Paul, Minn.	1.00
Dr. E. H. Nelson, Chisholm, Minn.	1.00
Dr. Theo. J. Jacquemin, West Hoboken, N. J. (second)	6.00
Dr. Lee M. Willard, Wausau, Wis.	5.00
Dr. Marcus Bossard, Spring Green, Wis.	1.00
A Friend, Ossining, N. Y.	1.00
Dr. W. H. K., Enosburg, Vt.	1.00
Alla B. Lewis, Scarboro, N. Y.	1.00
A Nurse, New York City	1.00
D. J. H., New York City	2.00
Dr. J. F. Tracy, Chicago, Ill.	1.00
A Friend, Rockford, Ill.	1.00
F. C. Kimball, Ayer, Mass.	1.00
M. M. L., New York City	1.00
G. H. K., New York	25.00

Total\$1,252.75

In addition to the medical journals mentioned last month as having given us substantial assistance and cooperation in bringing the American Fund for Belgian Physicians to the notice of the profession, we wish to include the following:

Illinois Med. Journal.
Medical Sentinel.
Medical Review of Reviews.
Dietetic and Hygienic Gazette.
Dominion Medical Monthly.

There are undoubtedly others that have escaped our attention but this makes to date twenty-eight prominent medical publications that have printed a full page advertisement or an editorial announcement, or both, referring to the Fund. Such generous, whole-souled cooperation speaks eloquently of the spirit that dominates our medical press.

In this connection we wish to call the attention of our readers to another committee formed by Dr. Franklin H. Martin of Chicago, Ill. Our original plea for the afflicted physi-

cians of Belgium appeared in the issue of AMERICAN MEDICINE for October. In the November issue we recorded collections of over \$700. When in December we learned of the committee being formed by Dr. Martin, the following letter was immediately despatched, for reasons which will be at once obvious.

December 12, 1914.

Franklin H. Martin, M. D.,
30 North Michigan Ave.,
Chicago, Ill.

Dear Doctor Martin:—

Our attention has been called by several prominent physicians to certain recent communications of yours relative to the formation of a Committee for the Relief of Belgian Physicians.

Can it be that you are unaware of the movement started here early in November to this same end? I feel that this must be the case, consequently I am forwarding marked copies of AMERICAN MEDICINE showing what has been accomplished. The American Fund for Belgian Physicians is growing steadily and through the Belgian Relief Committee—Rev. J. F. Stillmans, President—we have already placed a substantial sum in the hands of our afflicted Belgian confreres.

Now, my dear Doctor Martin, we have no pride of priority or the slightest desire to claim any credit for having taken steps to aid the physicians of stricken Belgium even before our English colleagues made any move in this direction. The situation is too urgent and the misery and distress of the Belgian profession are too great to allow any narrowness or unkindness to hamper or jeopardize in any way the utmost that can be done for our sorrow laden brethren.

It does seem, however, that a multiplicity of committees or funds for this same purpose will be confusing and allow some chance for misunderstanding and unwarranted inferences. The movement is so much more important than individuals, and our desire to see our Belgian confreres obtain prompt and adequate relief so overreaches every other consideration, that if the American Medical Association will inaugurate a movement for Belgian physicians, our Committee will serve as a sub-committee, turn all funds over to the Association Committee, or cooperate to the fullest in any way that may be desired. Again, if you think that a committee to be organized by you with headquarters in Chicago will be more favorably situated to accomplish the purpose of the movement, we stand ready to work with you in any way you may suggest. Or, if the success of the project can be furthered by our turning our Fund over to you, discharging our Committee, and leaving the future conduct of the movement for Belgian physicians entirely to a Committee you will organize, we will cheerfully do so.

Our only desire is that relief—real and tangible—may be given to the fine professional men of Belgium who are laboring under a burden of destitution and sorrow that beggars description.

If our withdrawal or elimination can make such relief more prompt or certain, we stand ready to take such action instantly.

I have written frankly, believing that you will understand the sincerity of our motives and the earnestness with which we regard this movement. Anything you will suggest looking to the success—not of our humble efforts—but of the greater proposition will find us ready and willing to do what seems best.

Respectfully yours,

H. EDWIN LEWIS.

The following is Dr. Martin's reply:

December 16, 1914.

Dr. H. Edwin Lewis, Editor
American Medicine,
New York City.

My dear Doctor:—

Upon returning from New York I find your letter of December twelfth.

I was not aware that a committee for the relief of Belgian physicians was in existence until the committee that I was interested in getting together had been selected, and those asked to serve had formally accepted. Our committee is organized in a way to obtain the full benefit of several sources of publicity, and the prestige of the presidents of the national medical and surgical organizations.

The work that has been done by your committee speaks for itself, and the help you render to our Belgian confreres will be definite and substantial, but inasmuch as all contributions are ultimately distributed through the same source and system, namely The Committee for the Relief of Belgium, there is no danger of duplication.

The headquarters of our committee will not be in Chicago, as inferred in your letter. We have taken particular pains to make it comprehensive to avoid any possibility of charge of provincialism. Materials and money will be collected from all portions of the United States and forwarded to the port of most convenience, in accordance with instructions of The Belgium Relief Committee. I am sure that no confusion of importance will arise because of two committees working for this magnificent cause. The initiative of our committee was a suggestion received from Sir Rickman Godlee, President of the committee organized in Great Britain for the relief of Belgian physicians.

My hope and desire is that your committee will continue its magnificent work. Under the circumstances I feel that our committee should develop its work along the lines originally intended.

Thanking you for your very cordial and frank letter, and trusting that you will believe me sincerely sympathetic with your work, and with kind regards, I am

Yours very truly,

FRANKLIN H. MARTIN.

The committee organized by Dr. Martin has selected Dr. Frank F. Simpson of Pittsburg, Pa., as secretary. We understand that contributions should be sent to him. Inasmuch

as the first and only consideration in both these movements is the urgent need of Belgian physicians there can be no conflict of interests, and we would be small indeed if we did not welcome any agency or means that can multiply the aid to be obtained from this country for so worthy a cause. So great, however, is our belief in the advantages to be obtained from concentration of effort in any project of this character that our committee would gladly have turned over all our funds and withdrawn from the work in the hope that Dr. Martin in view of his connections and interests might enlarge the movement and increase its efficiency. As this proffer did not meet with favor, our committee has continued to do its work to the best of its ability, grateful for the support it has received and hopeful for but one outcome, that our humble efforts may lighten some part at least of the burden of distress and anguish that our Belgian confères are at present laboring under.

We trust that every success may attend the work of Dr. Martin's committee. We understand already a goodly sum has been collected and we hope this will increase rapidly. Over 1,000 Belgian doctors and their families are in grave necessity and if untold suffering is to be prevented we in this country must continue our aid for not weeks, but months. Dollars are not so numerous that we can afford to give without limit, but when we think of the misery that has come to thousands of Belgian men, women and children almost in the twinkling of an eye, and how, through no act of their own, they have been made outcasts with famine and cold confronting them, there is not one of us who will not give as much as he can. Good friends, brother physicians, and every one who reads these words, if you have not sent in a contribution, we hope you will do something as soon as you can conveniently. If you would prefer to give to the new committee, send in your contribution to Dr. F. Y. Simpson, Pittsburg, Pa. Every dollar will find its way to where it is needed and that is what we all want above all else.

Respectfully submitted,

H. EDWIN LEWIS,

For the Committee.

ETIOLOGY AND DIAGNOSIS

Remarks Concerning the Diagnosis of Tuberculosis.—Emans forms the following conclusions of an article on an early diagnosis of pulmonary tuberculosis (*The Post Graduate*, September, 1914):

1. Pulmonary tuberculosis is certainly curable in its first stage, cured with difficulty in the second, and practically incurable in the third stage.

2. That while it is true in about 25 per cent. of the cases, the disease begins insidiously, and in some cases the patient does not recognize his condition and go to the physician until his disease is fairly well advanced, yet the majority go in time and give a history and symptoms which should lead to a diagnosis.

3. That among physicians generally there seems to be a lack of medical training, or painstaking, in making an early diagnosis.

4. That the disease can never be eradicated until early diagnoses are made.

5. That when the diagnosis is made it is a mistaken kindness not to tell the patient his condition at once.

6. That when the physician is in doubt he should call in some one on whose judgment he can rely.

7. That as a remedy—the public should be still more educated by lecturers, tuberculosis exhibits, the newspapers, etc., in order to make them suspect their symptoms and induce them to go to a physician without delay.

8. That in every medical college there should be a special course of lectures on tuberculosis, given by men of ability and large experience, so that the student is early impressed with the diagnostic signs and with the fact that in after life he is to be constantly on the lookout for that disease which is the most fatal of all, and yet the most curable of all, when recognized early.

TREATMENT

An Obstetrical Procedure on Trial.—An editorial in the *American Journal of Obstetrics* (Jan., 1915) discusses the use of scopolamine-morphine anesthesia in the management of labor so sanely and sentimentally that it deserves careful reading by every thoughtful practitioner. As the writer says: No development in obstetrics during the recent years has attracted so much attention among the members of the medical profession, and the public, as the procedure commonly designated as "Twilight sleep," or by its German equivalent, "Dämmerschlaf." The desire to alleviate the pangs of childbirth is a humane and justifiable one. Whether to accomplish this by a better preparation of the mother for her supreme function in life, or by means directed to the immediate alleviation of the difficulty during labor, is still an undecided question. To the impartial observer it must be apparent that the average woman of the present generation in what may be called the better walks of life, has less difficulty in most instances in delivering herself in a normal manner than was the case during the period of our mothers and grandmothers. This has undoubtedly been brought about by better hygienic conditions for our growing girls, including proper exercises and out-door life. A great many women

however, suffer considerably during the process, but, strange to say, the suffering in an ordinary, otherwise uncomplicated case of labor is of such a character that it apparently leaves very little lasting impression on the mind of a normal woman. It may be safely stated as a matter of fact that at the present time most women do not regard with dread their oncoming confinement. Stories of difficult labors, like other disagreeable experiences, are very apt to be talked over among a limited circle of women and being duly exaggerated in the telling, such isolated cases are frequently accepted as standards by women who are of a nervous temperament or of an unstable mental equilibrium.

Although parturition should constitute a perfectly physiological event, many factors both in the individual and her environment have contributed to make the process of pathological significance in many cases. Notwithstanding this, a large proportion of women under skillful care and supervision manage to go through their labor and get up in a reasonable time without injury to their mind or body. The period of preparation for labor as it involves the organs immediately concerned in this process, is a gradual one and where the physiological development has proceeded normally in the individual case the final delivery is usually free from burdensome accompaniments. An active labor consists of both involuntary and voluntary phenomena, each of which is active in its proper time and sphere and one set is dependent on the other. During the so-called first stage of labor the process may be summed up as one of the preparation and propulsion. In order that propulsion may proceed satisfactorily, dilatation of the lower uterine segment and the vaginal canal is essential. This is the result of the involuntary but coordinate action of the uterine muscle. Following this comes the stage in which propulsion is accompanied by expulsion, the result not only of involuntary but likewise of voluntary activity on the part of the mother. Therefore in discussing the value of the proposed procedure, the question resolves itself into what interference with the normal processes of labor results from its application, and whether any real necessity exists for its routine employment. The most enthusiastic advocates of the method of scopolamine-morphine anesthesia admit that although the first stage of labor is favored or at least not interfered with by the procedure, that the second stage, on the other hand, is very apt to be prolonged. It is during this time that the greatest danger to the child may result. It is claimed that the voluntary expulsive efforts on the part of the mother are not interfered with by this form of narcosis but that the woman is able to bring into play her accessory muscles of parturition without being aware of the fact. Is this contention borne out by the statistics which show that the prolongation of the second stage already referred to necessitates in many instances the application of forceps for the purpose of terminating labor? Admitting all the favorable things which have been said in regard to "Twilight sleep," are the results sufficiently convincing to permit of a general adoption of this

procedure? Those who have given the method a most careful study are of the unanimous opinion that individualization and the conduct of the case in a hospital are requisites to its proper and successful employment. This at once limits its application. Nevertheless many will attempt it under surroundings which are not favorable and if the popular clamor leads to its more extended application by the profession at-large, we will soon hear of direful consequences. In American medical literature a comparatively small series of observations have been reported and these only within the past few months. In Germany the publication of Krönig and Gauss have referred to a much more extended series of cases. Unfortunately, however, the brilliant results claimed by European observers have apparently not been duplicated in this country by careful students of the procedure. The first flush of success in its employment seems to have been succeeded in the minds of many by a more conservative attitude toward the method and it is doubtful whether in this country even those who are most enthusiastic will permit their enthusiasm to range as widely as that of our European colleagues.

It is sometimes claimed that the necessity for general narcosis for operative procedures is analogous to this device in labor. Here, however, our main indications for the narcosis, or anesthesia, are not only to avoid pain and shock but also to shunt out the uncontrollable efforts of the voluntary muscles of the body to overcome the operative insult. In labor the status is entirely different. We are dealing with the consummation of the final stage of the act of parturition, for which, under ordinary conditions, there should be no more need of narcosis than would be required for the act of defecation. Admitting, however, that most labors verge on the pathological and may require some degree of narcosis either to alleviate the pain or to favor the period of dilatation, have we not on hand remedies amply tried which will aid us in such cases? Is it necessary to resort to a drug or a combination of drugs, which have not been satisfactorily subjected to analytical tests and animal experiments and toward which patients very frequently manifest previously unknown or unsuspected idiosyncrasies? Are the advantages gained from the procedure of "Twilight" of sufficient extent and importance to overbalance the disadvantages which even the advocates of the method are compelled to admit. Undoubtedly a large percentage of women thus treated deliver themselves satisfactorily of nonasphyxiated babies, but aside from the amnesia, would not these same individuals have done equally well without a narcosis wrought with some degree of uncertainty and danger? On the other hand, can we disregard the warning sounded that in many women the second stage under "Twilight" is unduly prolonged, that forceps deliveries are often necessary and that a certain number of babies are asphyxiated? Is this proposition in agreement with modern obstetric tendencies which aim to make the act of parturition as natural and as free from artificial aids as possible? Are we not playing

with fire in allowing a more or less superficial knowledge of this procedure to be spread broadcast among the profession and laity? Is a propaganda of this kind among women not likely to engender an hysterical and unwarranted fear of the highest function of their lives? Is it fair to womankind for reputable physicians, and here no reference to the ethical aspects of the case is intended, to urge upon the sex in the public press a demand for such a procedure in order to hasten its adoption and to denounce the objectors of their rose-colored propaganda with the statement that they are merely ignorant concerning the method? Thus far the daily press has been the forum for the more or less one-sided discussion by the advocates of "Twilight sleep" and we have heard little by way of objection for the honest objector hesitates to be subjected to ridicule because he has failed to become convinced of the value or necessity of the procedure.

We do not wish to condemn "Twilight sleep" nor to detract from the honest claims made by those who state that they have tried out the method. The professional mind should be open to receive from legitimate sources any information which will tend to relieve human suffering. It should be free from prejudice, free from the desire of personal gain in judging the value of a new procedure, ready to discuss in a frank and open manner the *pro* and *con* of the question, to employ the forum of personal interview, the Society meeting and the medical press, and not the medium of the popular press and the department store. If medical opinion can be guided by an impartial study and trial of this procedure, the latter will not lack deserving attention, but the senseless reiteration of its wonders by writers and speakers, both lay and professional, such as have been published within recent months, may be justly regarded as undignified and questionable. If the production of a condition of semimarcosis as a routine procedure in normal labor is shown to be a desirable necessity, such a method will soon enough be adopted by the profession. Thus far the evidence adduced is not sufficient to warrant such a course. The indiscriminate employment of the method is bound to be harmful, will detract from its possible value and will hasten its relegation to the great unknown where now repose so many exploded medical practises and fancies.

The Treatment of Amebic Dysentery With Emetine.—Friedenwald and Rosenthal discuss this topic in the *New York Medical Journal* of July 4, 1914. From their observations, as well as those of Rogers and others, they believe we may safely conclude that:

1. Emetine is a specific in the treatment of amebic dysentery.
2. It is quickly absorbed and its effect is rapid and striking.
3. It produces no unfavorable symptoms such as nausea, vomiting and depression.
4. Other forms of dysentery are not favorably influenced by this remedy, so that its employment as a diagnostic measure is of the greatest value.

5. Recurrences after apparent cure are not infrequent. It is therefore best to treat all cases showing a tendency to relapse intermittently with emetine.

GENERAL TOPICS

Election at the Bronx Hospital.—At the last meeting, on Dec. 22, of the Medical Board of the Bronx Hospital and Dispensary, Dr. William J. Robinson was re-elected President and Dr. Martin Rehling, Secretary.

Cyclopedia of Medicine and Surgery Suspends Publication.—An announcement has gone forth from F. A. Davis Co., Philadelphia, that the *Monthly Cyclopedia of Medicine and Surgery* has been discontinued. This will cause sincere regret all over the country for this publication under the able management of Dr. Sajous was one of the most useful medical journals published in the English language. The position devoted to the internal secretions was especially valuable and many physicians have looked forward to it each month for articles on this topic. Its suspension is a real loss to medicine.

Consolidation of Journals.—*The Dietetic and Hygienic Gazette*, which is just completing the thirtieth year of its existence, has been purchased by *The Critic and Guide* Company and beginning with January, 1915, will be consolidated with *The Critic and Guide*, and the combined journals will be under the editorship of Dr. William J. Robinson. The offices of publication are at 12 Mt. Morris Park W., New York City.

The Gorgas Medal.—The Gorgas Medal to be given yearly in honor of Surgeon-General Gorgas has been established by the Medical Reserve Corps Association, New York State Division. This medal is open to competition to members of the Medical Corps of the United States Army, the Medical Reserve Corps of the United States Army and to members of the Medical Corps of the organized militia. Officers may submit papers on any subject of a medico-military nature.

General Gorgas has appointed the following board of officers to act upon papers submitted: Colonel Charles Richard, Lieut. Col. Champe C. McCulloch, Jr., and Major Eugene R. Whitmore, Army Medical Corps. These officers are members of the faculty of the Army Medical School and will have sole authority to appoint the time that papers are to be submitted, and to pass upon the merits of the papers.

All inquiries should be addressed to one of these officers.

American Medicine

H. EDWIN LEWIS, M. D.

EDITED BY

and

CHARLES E. WOODRUFF, M. D.

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The anti-vaccination crusade has reached a point where it must be met soberly and dispassionately for it has taken an entirely new direction, as we have previously remarked. The opponents are fully convinced of the protective value of vaccinia but merely say that the chance of dying of smallpox nowadays is much less than the chance of dying of one of the complications of vaccination, tetanus for instance. Why then should we run the latter risk until smallpox really threatens us? This appears to be so logical and reasonable that it appeals to the unthinking. The complications of vaccination are really lessening with the increased care of performing the operation and protecting the wound subsequently. A newspaper has recently succeeded in getting histories of but 48 cases, some of which quite evidently were coincidences having nothing to do with the vaccination. The tetanus cases were largely due to infections long after the vaccinations, for the symptoms began after an interval of two weeks or more and the period of incubation is less than ten days in 75 per cent. of cases and rarely if ever more than 20 days. It also gives a very false impression by failing to note that these few cases occurred among many tens or hundreds of thousands of vaccinations. The dangerous fallacy lies in the suppressed fact that when a community omits vaccination, the deaths by

smallpox in a short time far outnumber the complications of vaccinia. The few deaths by tetanus are the price we pay for saving untold thousands and hundreds of thousands from death by smallpox. This has been proved so often that physicians take it for granted, but we must now repeat the proof since there are millions of laymen who do not know it. If we could have universal vaccination we would have no smallpox deaths at all, as proved in Germany and Porto Rico, and the only deaths would be from the complications of vaccinia. The sensible course is to lessen the dangers of vaccinia not to omit it and let children die of smallpox. Right here we might as well confess that many of the complications are due to the carelessness of physicians, who perform the operation as though it were a mere scratch, instead of one requiring as rigid asepsis as an amputation. We blame our medical schools for much of this. The carelessness of physicians of a generation ago, should warrant revocation of licenses now. Few realize that vaccinia seems to lessen our normal resistance to the tetanus bacillus. We have no hesitation in saying that if the operation is done properly there will be no complications. The child may tear off the protective shield and infect the wound itself, but if we are to abandon vaccination because mothers are careless, the same reasoning

would not permit us to even treat the sick. There is no question that compulsory vaccination by its very success is creating this new crusade. Nevertheless we are taunted with lack of faith in it, for, they ask, why should we care if some school children are unprotected if our own are immune? We aren't afraid, but the basis of civilization is increased safety for all. If a primitive man saw a wild animal stalking a neighbor's children, he would protect them, and in civilization too it is our duty to protect children whose parents are in like ignorance of the danger. There is no comparison between vaccination and the use of other vaccines for emergency use, and it would be a disaster if compulsory vaccination were abandoned in the schools. It certainly behooves the medical profession to bestir itself to check this new crusade against public health. There might be something to say in favor of those who argue that adults should be permitted to run the risk, but it is too brutally selfish to allow children to go to destruction because their parents are ignorant. The law must stand, but the operation be made safer. The age at which it should be done depends of course upon the chance of meeting smallpox. On account of the difficulty of enforcing the law, it is now proposed to exempt the smaller communities from compulsory vaccination of school children except when smallpox is present. Cities of the first and second class are to remain as they are. We hope that the difficulty of administration will be overcome in time and the present law restored.

cent literature of the subject. The results reported by the world's foremost workers, have led him to the conclusion that tuberculin reactions are of no material assistance in diagnosis. Of course, if all persons are already tubercular, we do not need any test. We are safe in making the diagnosis in all patients over fifteen, but what we want to know is whether the lesion is latent and doing its duty of keeping us immunized against massive infection, or whether our immunity has been so weakened from the other adversities that the latent lesions are spreading and destroying us. Tice says that the degree of sensitiveness to tuberculin is no measure of the activity or latency of the tuberculous infection, but that this must be estimated by laboratory and biological methods. It is not such a vital matter after all, for if the symptoms are such as to be explained as due to active tuberculosis in the absence of any other known cause, we invariably prescribe a treatment which would arrest the activity of the lesions. We would like to know the cause of every case of sickness and are striving to that desirable diagnostic excellence, but since in fully ninety percent of us active tuberculosis is checked or cured without the diagnosis having been made, we need not be unduly depressed because it is still impossible to make a diagnosis in the earliest stages, even by the X-ray. The point is to cure the patient. A rational hygiene will do that, and if it so happens that his illness is due to some other cause, he is doing exactly the right thing anyhow, until we find that cause.

The popularity of tuberculin is diminishing according to Dr. Frederick Tice of Chicago (*N. Y. Medical Journal*, Nov. 14, 1914) who has carefully reviewed the re-

The denial of the therapeutic value of tuberculin is the disheartening part of Tice's conclusions. He says that it is not only losing in repute but that the indications justify the prediction that it will soon be quite generally discarded. We hope he

is wrong, for the profession seems to have been looking upon tuberculin in some form, as a possible solution of the whole tuberculosis problem. Its growing popularity after we found that the early failures were due to overdosage, certainly justified a little more than hope or even expectancy. Certainly the spread of a life-long latent lesion means that the body cells or fluids have lost some protective substance which had kept the parasites in check. The bacilli had taken an increased malignancy or the tissues lost resistance. Which happens is immaterial, so long as a restoration of this substance gives the tissues the upper hand. What more reasonable than to search for the substance or a way of making the tissues renew their manufacture more quickly than by life in the open air, increased nutrition and other well known measures—safe but slow. We had been led to believe that tuberculin did make these measures more rapid, effective and lasting, but not curative of itself. It is therefore a great shock to learn that we might have been wrong. Still, the history of medicine is a long series of such reversals of opinion. The pendulum is on its second reverse swing now, and it would be wise not to let it carry us off our feet and into an untenable extreme as it did once before. Let us try to take safe middle ground until we do find the substances on which immunity depends. Many observers have thought they found some form of tuberculin useful, and such keen men may not all be wrong, though of course the whole profession has been in error more than once.

Legalizing abortion is the startling suggestion made by Dr. M. Rabinovitz, Gynecologist of Beth Israel and Sydenham Hos-

pitals. (*N. Y. Med. Journal*, Oct. 14, 1914). He states that the demand for abortion has become so great that it has created a new specialty among reputable graduates of medicine who are willing to defy the law, and who openly solicit work from the profession. Family doctors will refer cases to professional abortionists who not infrequently do the work with disastrous results in the way of perforating the uterine walls or infecting the cavity and tubes. What is still more startling is the fact that public opinion seems to approve this defiance of law. The counsel for the N. Y. County Medical Society reports that in the last decade it has been possible to convict only three abortionists all of whom were pardoned by the governor. In one case, the jury acquitted the accused because he did the work successfully. They would not interfere with the practice because they approved of it. Rabinovitz argues that as society demands the practice, the law is a dead letter and might as well be revoked as in certain European countries where the operation has been made legal. Then the case can be admitted to hospital and all necessary aseptic precautions taken as in the cases where a pregnancy is legally interrupted for surgical reasons. He says also that there are economic reasons which often demand the operation and that society is really injured if such a pregnancy continue and the family become a burden on charity. Others are quoted as indicating a professional drift in this direction. Quite naturally a great many people are shocked and there will be strong opposition to any change in the laws. The subject cannot be discussed dispassionately by most people.

The religious objection to abortion is very clear cut. The fertilized ovum is a

human being with as much right to live as anyone else. To kill it is murder in defiance of the commandment of God. It makes no difference if the ovum will kill the mother. We cannot step in because the ten commandments are silent as to our duty to save life. There is no chance for casuistry to enlighten us, as there is no room for doubt. The mother must die, for to save her the physician must violate God's sixth commandment. We have yet to meet a mother who holds these religious views. When presented with the alternative of dying and leaving her other children to suffer or die, or saving them and herself at the sacrifice of the unborn which is bound to die before birth anyhow, she invariably demands abortion. The law at present takes a modified view. Murder is not committed unless the child is fully born. To kill it any other time, even when part born is a minor offense, and to kill it to save the mother is no offense at all. As a further step the present demand is to legalize the destruction if the normal termination will in time be merely injurious to the other offspring or the parents. We see no indication that such a change in the laws is an early possibility. It goes against the religious convictions of too many people. Even those who secretly approve of it, will be afraid to approve of it openly. If such changes in law are to come about it can be only a slow change in public opinion. If the law against abortion properly performed by licensed physicians has really become a dead letter, there will be no immediate need for its repeal. In the meantime what is to be our ethical attitude towards the legally licensed highly skilled professional abortionist?

Dr. Wm. J. Robinson (*N. Y. Med. Jour.*, Oct. 31, 1914) in approving the position of Rabinovitz, mentions the fact that many

European societies and authorities have advocated a change in the laws, the Pirogoff society of Russia even demanding the total abolition of all restrictions, while Prof. Kocks of Bonn approves the Roman view that the ovum is part of the mother's viscera and she can dispose of it as she pleases (*infans pars viscerum matris*). He intimates that women demand abortion and are going to get it in spite of all theological or professional condemnation from the male half of humanity.

Is there a Harvard Medical Ring?

Dr. E. A. Codman says so, according to newspaper dispatches, and has been forced out of the chairmanship of the surgical section of the Suffolk District Medical Society, because he accused the alleged ring of needlessly operating at fancy prices, for appendicitis for instance. This is dreadful—and in sacred Harvard, too, with its halo. As to needless surgery, Deaver and Mayo said the same thing of other parts of the country, but at last reports neither had been drawn and quartered for telling the truth—probably because the surgeons criticized lived in outer darkness at some place where the golden light of the elect had not penetrated and they had to get the light of gold in other ways. But come to think of it, what a foolish thing to persecute a man for telling the truth! Much unnecessary operating is done, and fancy prices are charged for needed work. Everyone knows it, so why grow indignant instead of remedying the evil. No profession is immaculate, and all, except the medical, have ample machinery for investigating and correcting evils. If surgeons would only stop the pauperizing habit of operating for nothing, but make a variable charge according to the patient's

means, they would not be compelled to charge some beyond their means. If the patient has no means then society must pay the bill, for the habit of expecting free labor from surgeons must be broken up. If the community does not care enough for its poor to pay for their necessary operations, why not come out honestly and say, "Let them die," instead of shifting the burden to surgeons who have a hard enough time as it is,—unless in a "ring." Let all honest labor be paid for, whether it be surgery or street cleaning. The state never expects a lawyer to work without pay. If the rule were universal, medical rings could not exist. Lives are not equally valuable, and a surgeon should receive a much larger fee for saving the president or a millionaire, than for saving a clerk or pauper. The fixed legal scale of prices adopted here and there is absurd and unnatural. But as any charge for a needless operation is a fancy one, perhaps in that respect Dr. Codman is right.

Doctors who do not practice were not very numerous in the days when students were regularly apprenticed to practitioners, but they seem to be getting more numerous with the increasing facilities for study. A recent writer in a lay magazine has asserted that five hundred employees of the Boston Elevated Railroad are graduates of medicine. There must be an error here for we can scarcely believe the number so great, but we have heard before that one-fourth of our graduates eventually abandon medicine. Does this mean that they have failed as practitioners or that there are too many graduated for the work to be done? Perhaps both surmises are correct, although some may prefer life with the crowd to the isolation of country life where doctors are urgently needed. There is ample ground for suspecting that a salary even though it be small is

better than the irregular income of a country doctor many of whom are desperately poor. Whatever the reason, it is a sad thought that so many men waste time and money on an education which is to be of no use to them. We are much afraid that many of them are victims of the old system which gave instruction to those who were not intelligent enough to understand it, and who were for that reason also poorly equipped in the preliminary scientific knowledge. They found their level in the end. What a pity they were ever advised to study. Could we not save some future failures by advising would-be students to seek other work unless they have a good training and a good mind? Still, there is a silver lining to this cloud. It is a fine thing to have so many medical men in other callings to create a public opinion in favor of sanitation. They leaven the mass. Perhaps the public demand for better and better sanitation may be partly due to the missionary work of these men. If they are happy and making a living, they are to be envied and we ought to be thankful for the good they are doing. Why worry over it then?

The insanitary condition of Sing-Sing Prison has been noted quite frequently of late, and it is high time that something be done to remedy the evil. The dark damp cells are like medical dungeons and should have no place in civilization. It is charged that they are responsible for the activation of tubercular lesions which would normally remain latent through life or disappear. We cannot charge the cells with spreading infection, now that we know the criminals, like the rest of humanity, to be tubercular already. The prison authorities are unquestionably careful as to disinfection and

that should have prevented new cases if local infection was responsible. Yet new cases arise and the only reasonable conclusion is that the place is unfit for habitation. So many investigators have come to the same conclusion on other grounds, that we may accept it as a fact. The State should build a new and modern institution on a more salubrious site and the sooner the better. Not only must there be better ventilation but larger grounds and more opportunity to be out doors. The new administration could not make a better mark than by remedying this great evil. The medical profession would unquestionably approve a new institution unanimously. At present it is said that convicts are released in a physical condition even less fit to make their living honestly than when they entered.

The remarkable discovery of pituitrin

is one of the romances of medicine. Twenty-two years ago we did not even suspect that the pituitary body had a use, and now one of its secretions is establishing itself as an essential in practice on account of its marvellous stimulation of muscular contractions. It seems only yesterday that Woods Hutchinson and Charles L. Dana independently discovered the enlargement of the hypophysis in giantism and reported the facts to the 1893 Pan-American Medical Congress (see Proceedings 1894), and now surgeons are operating on the gland. They also found a similar enlargement in acromegaly and Hutchinson was the first to suggest that the pituitary secretion was a skeletal growth regulator, giantism being acromegaly beginning in early life, that pituitary was atrophied in dwarfism and fetal rickets, and that there was a pituitary factor in chorea and possibly diabetes (N.

Y. Med. Jour., 1898 and 1900). Writers are prone to give all the credit for these American studies to Europeans.

In the meantime further discoveries have been made which are summarized by Dunn (*Amer. Jour. Med. Sc.*, Aug., 1914). Hyperfunction of the anterior or glandular part results in acromegaly and giantism while defect causes true dwarfism. Hyperfunction of the posterior or nervous part results in diabetes insipidus and hypofunction results in hypophyseal obesity with genital deficiency. There can be combinations of the above and also conjunction with activity of other glands such as the sexual, thyroid, thymus, adrenals, pancreas or pineals. The curious mental conditions accompanying pituitary abnormality are yet to be explained.

The great therapeutic value of pituitrin

has been applied in many fields. Its use in labor has been set forth by Bandler, (*Medical Record*, Jan. 9, 1915). From this article we gather that it increases the uterine contractions safely and surely, lessening the duration of labor, the hemorrhage and other complications and frequently obviating the necessity for instrumental delivery. It stops a postpartum hemorrhage in a few minutes and is replacing ergot. In post-operative conditions it quite promptly moves the bowels. It increases the pain felt in labor, but with the judicious use of chloroform, he thinks it the best "twilight sleep." The scopolamine mixture is condemned as prolonging labor and neutralizing the action of pituitrin. Equally marvellous results are claimed for pituitrin in abortion and cesarean section, and King praises it in the vexing problem of intestinal stasis, (*N. Y. Med. Rec.*, Jan. 30, 1915). Zueblin has used it in heart failure and decompensation (*Boston Med. and*

Surg. Jour., Dec. 24, 1914) and reviews its uses in other conditions. Naturally the possibility of transplanting the gland to the bodies of those in whom it is atrophied, suggested itself, and Waitzfelder of New York tried it with curious results (*N. Y. Med. Jour.*, Nov. 21, 1914). We are rather shocked that in his account of gland transplantation he makes no mention of Lydston's great pioneer work.

The objections to pituitrin in labor have been detailed by Watson (*Monthly Cyclopedia and Medical Bulletin*, Aug., 1914). It occasionally has no effect, particularly in elderly primiparae, and sometimes it causes disturbances of the heart and respiration, with vertigo, dyspnea, cardiac distress and tachycardia. The contractions of the uterus may be tetanic and the internal os spasmodically closed. Removal of the placenta may thus be made difficult and indeed sometimes the os must be incised. If there are twins, the birth of the second is delayed, and if given too soon in cesarean section, delivery is difficult through the incision in the uterus. Sometimes atony of the uterus occurs after the third stage which may be remedied by ergot. The increased pressure on the child may become dangerous, necessitating delivery by forceps. Other muscles may also contract. There may be spasm of the glottis and contractions of the limbs. He says it is not as efficient as ergot in post-partum hemorrhage, but seems to make the uterus more sensitive to ergot. On the whole pituitrin is not a remedy to be given flippantly as a routine, but seriously and with a view of staying with the patient to the end, on the lookout for complications. Evidently its exact sphere of usefulness will not be known for sometime.

The treatment and prophylaxis of whooping cough, based on the Bordet-Gengou etiology, was described by Dr. Paul Luttinger of the New York City Board of Health, at a meeting of the Medical Association of the Greater City of New York, Jan. 18, 1915. Though the results of the vaccine were found to be favorable enough to warrant further trial, they were distinctly disappointing as a whole. He found that the paroxysms were lessened in severity and number, and the duration of the disease shortened, but not as much as we had been led to expect from the optimistic reports from Europe. It is certainly not a specific. This is another instance of the necessity to try out for ourselves every suggestion from abroad. It is not yet certain that the Bordet-Gengou bacillus is the cause of whooping cough, but the doubt is too small to interfere with further trials of the vaccine. Luttinger suggests that some failures may have been due to giving it in doses too small to have any appreciable effect. Perhaps a larger dosage will result in the resumption of the practice where it has been abandoned. The facts are still too contradictory for a summing up of the vaccine's value as a prophylactic, but enough was reported to warrant further trials. The startling suggestion was made in the discussion, that possibly whooping cough is contagious only in the early or catarrhal stage—possibly a matter of only a week or so. If this should prove to be true we must make a revolutionary change in our present methods of isolation and quarantine. We must go slow in this direction as the disease is too serious to juggle with. Still we must say that so few restrictions are placed on the children that the disease would be much more common if it were contagious in the late stages. It

may not be necessary to placard houses or put brassards on the arms of the afflicted children.

The vitamins seem destined to play a large part in the new science of dietetics which is replacing the collection of food fads which masqueraded in the garb of that science. They are nitrogenous bodies of definite chemical composition, first isolated and described in 1911 by Casimir Funk of the London Lister Institute of Preventive Medicine. In nutrition they play a role which might be likened to that of the hormones in cellular activity or the opsonins and other antibodies in the infections. As is the rule, Funk's great conception attracted no attention for awhile. Until a few months ago the vast majority of us had probably not seen any references to it, but now that it is known to coordinate and harmonize so many detached facts in malnutrition, medical literature contains increasingly numerous references. Avitaminosis is a blanket term used by Funk to cover all the deficiency diseases,—scurvy, beriberi, pellagra and rickets. To these we may add a host of ill-defined conditions in the poorly fed and variously attributed to calcium, potassium or phosphorus starvation. An excess of vitamins is alleged to be the cause of cancer. These remarkable substances exist in exceedingly minute quantity and may act like enzymes, catalytically changing a large amount of food. They are found in the outer layers of grains but not in the starchy centre, thus accounting for beriberi after the use of polished rice, and pellagra after milled corn. They seem to be destroyed in many corned, pickled or dried foods thus accounting for scurvy. They are of course largely in excess of the natural foods,—milk, eggs and meat, and to a less extent

in yeast, fresh fruits and uncooked vegetables particularly potatoes, whose juice is so effective in scurvy. The condition we have called nitrogen starvation may exist even when the vitamins are abundant, so it has no relation to what Funk calls deficiency diseases. Yet those in a condition of nitrogen starvation are likely also to be suffering from deficiency of vitamins and therefore furnish a large percentage of cases of scurvy, beriberi and pellagra. They are cured by anything containing vitamins, but their nitrogen defect is not relieved unless proteins also are administered. It is suggested that a diet defective in vitamins also weakens our acquired immunity to tuberculosis, and that the rich diet we now prescribe cures by reason of the excess of vitamins rather than the nitrogen solely. In polyneuritic pigeons fed on polished grain, the thymus undergoes extreme atrophy, showing a relation between the hormones and vitamins. Indeed the subject opens up a new field. For the present, we must insist upon variety of diet in all conditions, for one article may supply vitamins lacking in another. Sameness clogs, perhaps because of a physiological hunger for the missing stimulants. By all odds, this new conception is the most far reaching one of recent years and will probably clear up many of our dietetic puzzles.

¹Articles are published in *Trans. Soc. Trop. Med. a Hyg.*, 1911, p. 86, *Jour. of Physiol.*, 1911, p. 395 and 1912, p. 75, *Lancet*, 1911, p. 1266, *Jour. State Med.*, June, 1912, *Muench. Med. Woch.*, Mar. 31, 1914, *Science Progress*, 1914, *Ergebnisse der Physiologie*, 1910, p. 124.

Gastric Flatulency.—For gastric flatulence try aromatic spirit of ammonia, 25 minims; spirit of chloroform, 15 minims; spirit of peppermint, 12 minims; spirit of cajeput, 8 minims. Take a teaspoonful of this mixture in a wine-glassful of water whenever necessary.—*Medical Standard*.



MEN AND THINGS

The licensing of aliens graduated from foreign medical schools has always been made as easy as possible, because of the prevailing idea—the fallacy of which we are beginning to realize—that a foreign diploma is indisputable evidence of exceptional qualifications. Recently we have heard some bitter criticisms of this course by men who, basing their opinions on information at their command, have frankly stated that many alien physicians are not infrequently very poorly equipped for practice. The question is likely to come up and assume serious proportions if there is to be such an immigration of foreign physicians as predicted by our correspondent whose letter we are glad to publish in this issue. There is sure to be very great poverty after the war, and doctors will suffer—as they have suffered—like everyone else. How many will leave home attracted by better prospects here remains to be seen. If they could be informed of the enormous number of unsuccessful and unemployed here already, they might hesitate before joining the ranks. Unhappily they will not know and we are likely to find ourselves burdened with a large number of foreign born doctors in distress. It is sufficiently serious for those already here to think over, and if they see signs of trouble ahead, to write back to the homeland to friends or relatives explaining that the struggle for bread and salt is just as real here for medical men as abroad. It might be well to tell them also that, except in the case of men of eminence and authority in their profession, obtaining a license is in most of our states a serious matter, for the requirements to enter practice have been steadily increasing for some time. The wisdom of this is emphasized by Dr. Engzelius and rigid restrictions are entirely right and proper for new men—recent graduates from schools in this country and practitioners trained in other countries—but we do not want to

overlook that the enforcement of such regulations on men who have practiced for years in one state, and wish to move to another will impose a most unfair burden. Therefore, while we are strongly in favor of reasonably strict and rigid standards designed to protect the public against unqualified practitioners, we are no less committed to the belief that a license regularly obtained in one state should be sufficient to allow a physician to practice in any other state in the Union. A national medical practice law has been suggested as the easiest solution of the problem, but an extension of the plan of reciprocity as already in effect between quite a number of states would seem to be more acceptable from many standpoints.

The Federal antinarcotic law which becomes effective March 1, was devised to check the drug habit, under the presumption that the more difficult it is to obtain a drug the fewer will be the victims. As a matter of fact, millions of doctors and druggists, who have handled opium and cocaine, have not contracted the habit, though they have perhaps furnished more than their share of cases. Prohibition of the sale of alcohol or the restriction of its sale has not decreased its consumption and there is reason to doubt whether the number of drunkards has been lessened by it. The reduction of alcoholism is a world wide phenomenon which no one has satisfactorily explained, and the decline seems to be more noticeable in communities where the sale is unrestricted, while we hear rather disquieting stories from prohibition districts. It remains to be seen whether the system will be any more successful with drugs or even do enough good to warrant the inconvenience inflicted upon physicians. It would seem that a more sensible course would have been to find

out why certain people become drug fiends. We have a legitimate cause of complaint against physicians who have specialized in the treatment of this condition, for either they have not studied their patients with the care given to other affections, or they have not reported their cases with sufficient detail. The popular idea is that the victims were normal people who had acquired the habit as a result of a few doses given for some temporary illness, whereas it is probably safe to say that there is a pre-existing nervous instability in every case. Normal people rarely acquire the habit, and the abnormal take up whatever is handy. Our colonial ancestors resorted to hard cider and their forebears to meat. Tea and coffee drunkards are of the same class. For generations every community has had its laudanum drinkers or "opium chewers." The victims are more numerous in America because we are more neurotic from climatic damage, but there is no evidence that the neurotics are increasing from generation to generation. The total created alarm, and we doubt whether the bill would have passed if the legislators had not been carried off their feet by the hysterical statements of the estimated numbers of drug victims. There was no one present to explain the facts presented by the authors of the bill. Nevertheless the experiment may be worth trying and we hope it will be given faithful support at once, so as to furnish proof that will lead to the early removal of the humiliating espionage on the sick. We have our black sheep, just as the clergy have, but that is no reason for considering all of us potential scoundrels. Perhaps we have had more liberty than has been good for us, and we surely have been negligent in not devising ways of eliminating those who have abused their therapeutic freedom. Of course a noisy part of the public always resents our efforts to clean up, by raising the cry of persecution or professional monopoly, but that should not deter us from disqualifying those who are really vendors of drugs for drug victims. Such a despicable way of getting an income deserves exposure at no matter what cost.

The inconsistent part of the law is the freedom given to ignorant quacks to sell mixtures containing not more than a certain percentage of the prohibited drugs

even though the total may be lethal, while the prescriptions of qualified physicians for higher percentages, though smaller in dosage and total, are considered so dangerous as to need official inspection. We are afraid that the spirit of paternalism has run mad. Indeed, the law comes precious near to violating the confidential relations of doctor and patient. The effect of similar laws elsewhere has merely been to raise the price of the drugs to the victims and to create a new class of criminals.

As law abiding members of the body politic, however, we have no alternative to obeying the law, and while this is bound to work more or less hardship on busy practitioners, for the sake of aiding the act to achieve the good it is aimed to accomplish, every earnest physician will follow its regulations to the letter. We would be untrue to our calling, moreover, if we did not sincerely hope that, however much inconvenience it may entail, it may yet prove far reaching in its benefits to those it is particularly designed to help.

A most surprising breach of common courtesy, to say the least, has been committed by the person who secretly and without the slightest authority has taken the liberty to reprint part of an editorial from AMERICAN MEDICINE and send the same to physicians all over the country. The material appearing in the pages of this Journal is covered by copyright, but even if it was not, it is always customary for anyone desiring to use any portion of any article or editorial *for any special purpose* to request the privilege in an open, above board manner. Failure to do so not only constitutes a rank discourtesy and throws more or less suspicion on the motives involved, but lays the user open to prosecution.

In the present instance we have no knowledge whatsoever as to the guilty party. Efforts to establish the identity of the person who has taken such unwarranted liberty with the editorial material of this Journal, have been fruitless, and we can only hope that the course of events will give us the information we are seeking. The reprint, as will be seen from the reproduction on the opposite page was prepared with the apparent intent of making it appear as though put forth by AMERICAN MEDICINE. That

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Chapter entitled "Men and Things"

The ethics of medical advertising must always be changing for our needs change with the increasing exactness of scientific medicine. What was allowable in the days of mysticism is now ineffectual, and what was wrong before the days of scientific pharmacy, when drugs were compounded wholesale by quacks only, is now a necessity. We have long had a rule to cut out the extravagant claims of proprietors of brands, and instead of receiving approval, we are condemned by the immaculate one, bless his pure heart, because we allow the owner of the goods to say it is "an efficient remedy." At the same time, he himself prints an advertisement of a nostrum or trade marked brand of an article and sanctions the statement that it is a "dependable remedy in the treatment of many intractable lesions," meaning expressly those of specific origin, which are universally known to be incurable without internal treatment. And yet in the aforementioned issue of the Association journal there is a criticism of the advertising ethics of six journals whose popularity and widespread circulation make them attractive advertising mediums for owners of trade marked brands of remedies, as well as of all other products used by progressive physicians. It would seem that medical men realize that it is the independent journals that supply the profession with information wanted, especially along therapeutic lines, and much of which for one reason or another is excluded from the official journal.

The editors of one of the criticized journals

are professors of therapeutics and surgery in two of America's foremost colleges, and the medical profession evidently considers the ethical and scientific opinions of these leaders as more nearly correct than those of the "immaculate one." There are so many errors, unwarranted conclusions and malicious innuendoes in the above mentioned article, that the profession must be warned not to accept the unverified statements of the *Journal of the American Medical Association* on any topic nor to be deceived by its narrow illogical attitude towards trade marked preparations of pharmaceutical articles. If the Association desires to carry on such a campaign against progress it should select as its agent or spokesman one who not only has had a large experience in general practice and knows its practical necessities but who has a comprehensive knowledge of modern scientific pharmacy and therapy. Surely such a leader would not find it necessary to conduct a campaign of personal attack and abuse against those who refuse to accept all of his views. The profession seems to be disgusted with such methods, and may yet call the Association to account. There is a growing resentment against the Council on Pharmacy and Chemistry for its erroneous views on vaccine therapy—matters entirely beyond the sphere of pharmacists and chemists, and if it is fathering these new errors it may lose caste entirely and cause the really excellent work it has done in its proper sphere to be overlooked.

the perpetrator of this discourteous and discreditable act fought shy of assuming any responsibility himself is shown by the use of blank envelopes and the great care taken to avoid any address that might admit of its being traced back to the sender.

AMERICAN MEDICINE wishes not only to disavow any connection with this reprint, or knowledge of the person or persons mailing it, but to state also that when it has anything to send to the physicians of the country it will not be in a blank envelope or in a manner that will leave any doubt as to the source. We have no apologies to make for the editorial from which the portion under discussion was surreptitiously reprinted. We stand squarely by the views expressed. But what we do object to, and most strenuously, is the unauthorized use of anything from our pages. Ownership in the material we print—editorials, articles, notes, etc.—is as definite and clearly established as it is in any other form of property, and the right to say when and how it shall be used after it appears in AMERICAN MEDICINE is vested in the management of this Journal—and no one else. For anyone outside of this management to make use of this material in any other than the usual journalistic ways without obtaining explicit permission to do so, is indefensible from any standpoint; every principle of courtesy, honor and honesty is outraged.

The utter disregard of our rights in the premises has naturally disturbed us very considerably, but the flagrancy of the deed is increased immeasurably by the secret way in which this material has been sent out.

We wish to go on record as absolutely and unequivocally opposed to such methods. When we have anything to say about anything or anybody we believe in saying it openly, and instead of seeking the shadows of anonymity, to come out and stand by our convictions. It is true we have resented the unjust attacks made upon AMERICAN MEDICINE and other independent journals by the *Journal of the A. M. A.* Certain of the methods of the present management of the Association have appeared to us unwise, unfair and improper—and we have not hesitated to say so. We have also frequently condemned the unkind and discriminative attitude of the directing forces of the Association towards everyone who was not sub-

servient to and in entire accord with their injunctions and assertions.

At the same time, we have never failed to voice our deep respect and admiration for the Association as a splendid American institution with a great deal to its credit—for instance, the influence it has had in raising the standards of medical education, in promoting constructive health legislation and in advancing medical affairs generally.

During the past ten years the *Journal of the A. M. A.* has steadily gone forward until to-day it stands as one of the greatest and most widely read medical publications in the world. While its advance has to a large extent been a reflection of the medical progress of the period, it would be manifestly unfair to deny that the *Jour. A. M. A.* has contributed substantially to that progress. It would be no less unfair, also, to fail to credit a considerable part of its success to the executive ability and genius of the men who have been at the helm. Right here, however, we are constrained to say further that we have often wished that in the conduct of the *Journal* a kindlier, more charitable and more considerate spirit was in greater evidence. But we have never expressed this sentiment without coincidentally acknowledging the many qualities that deserved approval.

In other words, if we have condemned the bad, of which there has been much—we have been just as ready to commend the good, of which there has been a great deal more. Never have we resorted to meanness or wilfully tried to harm or injure any one. We have too many faults and shortcomings of our own to make it seemly in us to set ourselves up as a criterion of other people. No, those charged with the direction of AMERICAN MEDICINE have no desire to play the role of the captious, pedantic critic, seeking to reverse and revamp the whole medical universe. On the contrary, it has been our aim to give AMERICAN MEDICINE a broader purpose, with service—faithful unflinching service to the American medical profession—as the moving force. How much success we shall achieve time alone will tell.

We have allowed these remarks to take the form they have to emphasize the fact that while we propose to express our honest opinions on many and various topics from time to time, these opinions will never have

any ulterior or hidden purpose, *nor will they be intended for any use not connected with the usual and ordinary aims of journalism.* Especially do we want it understood, in respect to the present instance as well as to any in the future, that if any material from AMERICAN MEDICINE is reprinted and sent out secretly and irresponsibly, we not only have no connection with it whatsoever, but will ever be the first to deprecate it and condemn it.

Alcohol in War.—The prohibition of strong drink in Russia during the war, particularly in the army, has been quite generally hailed as a great advance in the art of war. It certainly is an improvement over the habits of a century ago, when it was almost a duty to get drunk now and then. Even clergymen followed the custom. In spite of the known harm, the per capita consumption of alcohol seems to be increasing the world over, particularly in this country where prohibition is the rule in more than half its area. We timidly suggested some time ago that perhaps alcohol had a use after all, because harmful habits disappear from the survival as fittest of those who do not practice them. Someone has now suggested that possibly the vitamins are not destroyed in some of the beers and wines and that they thus supplement a defective diet. We do not subscribe to this suggestion, because it is not proved and there are too many men who would prefer beer to the more sensible practice of correcting their diet, but it shows that an effort is being made to explain the persistence of alcoholic drinks in spite of their known harm. Now comes Dr. H. Lyon Smith of London, who in a letter to the *Lancet* (Oct. 10, 1914) advocates the moderate use of alcohol by soldiers to increase their resistance to the prevalent infections. This is a startling reversal of medical opinion, for we are of one mind that alcohol reduces our normal immunity. Smith claims that our error is due to the fact that the experimenters used excessive amounts, equivalent to ten ounces of alcohol for an adult man, but that the moderate amounts used in his experiments, the equivalent of two ounces for a man, had the opposite effect of increasing phago-

cytic action on the invading germs. He also quotes Besredka's experiments in which alcohol in moderation prevents experimental anaphylaxis. So he is quite sure that alcohol should be kept as an emergency ration for occasional issue by company officers. The suggestion almost takes our breath away, but as it is based on scientific observation we cannot dismiss it as we do the suggestions of liquor dealers. We must wait awhile, until we no longer have cold chills at the thought. The abolition of the daily rum ration in our army was followed by great improvement, but we may have gone to an unwarranted extreme in total prohibition. It is not sensible to deny any good in alcohol, so we had better find out what the good is, and let the soldiers have the benefit of it. When a civilian is hurt on the streets, about the first thing the kindly minded bystanders do, is to find him a drink of whiskey, and we have not recently heard any violent objections to the habit from the surgeons. If the drug helps the invariable hypodermic of morphine to lessen shock and increases immunity to pus organisms at the same time, is it not near-murder to keep it from the wounded soldier because we favor total abstinence in the healthy? Every useful drug is lethal in excess, but must we refuse them all because a few people are killed by them? We are afraid that our fanatics have increased the horrors of war. Mercier is quoted as saying that alcohol does not drive men mad, but madness drives them to drink. Perhaps we will be more rational in our views towards alcohol when we know a little more about its effects in small doses on men who are not mad.

Spies among American nurses in Europe have at last been discovered, as we fully expected from the history of the Boer War. It is a most contemptible thing to misuse the Red Cross this way, but spying is a contemptible thing itself and cannot succeed without betrayal of confidence. Twice, now, have our own efforts to relieve distress been put to dishonorable use, and as the disgrace falls upon us all, we would suggest that parties sent abroad be very carefully selected to exclude all whose

immediate ancestry shows that they might have ulterior motives. They might not be totally excluded, for they could be sent to work in their ancestral country, but they must be kept from the land of their enemy. It is opportune to say a word to our foreign born citizens, who have been received here with open arms because they fled from persecution abroad. We have no quarrel with their oppressors, indeed there may have been ample justification for some of the alleged political persecutions. It is therefore a dishonorable violation of the hospitality of asylum to use their freedom of speech to try to bring this country into unfriendly relations with our traditional friends. It is not America's destiny to right the ills of the world, yet every little foreign group imagines it our duty to correct some evil in the place they were born, and has the impudence to demand governmental action. We may soon enough have our hands full struggling for our own existence, and will sorely need the help of countries who have more than once saved us from destruction. Yet these very countries have been brought to the verge of unfriendliness with us by the unwise conduct of our foreign born citizens. What is still worse, is the conduct of some politicians who, though of the first or second generation native born, still keep up the propaganda of their immigrant ancestor, even though the original evils have long been corrected and the attitude of relatives abroad has been reversed. Medicine in none of its branches must be used for political ends, and particularly must not be used to weaken the friendly relations we should have with the whole world. As a matter of fact, we have no friends on this side of the world and mighty few on the other. Our national existence and prosperity is to a great extent the result of the labors of the foreign born, such as Alexander Hamilton and Carl Schurz. Lesser lights should know that to work for their ancestral land is to work against the adopted lands to which they have sworn allegiance. He, who says he would fight for his native land in case of war with America thereby forfeits his citizenship besides showing that his oath is valueless. It is time to cool down a little and look facts in the face now that Ameri-

cans are hiding in the Red Cross to act as spies for one of the belligerents. All is not fair in love and war.

Report of the Committee in Charge of the American Fund for Belgian Physicians.—Subscriptions continue to come in to the Fund for Belgian Physicians and in acknowledging the receipts below we wish to thank those who have thus helped along the good work. We are indeed grateful for all the generous cooperation that has been shown by so many different individuals. To our editorial colleagues we are particularly thankful, for right loyally have they stood by us.

In the meantime the plight of the Belgian physicians continues to require all the aid we can give them. The different agencies at work have done nobly and undoubtedly much distress has been relieved. But the winter is not yet over and the economic conditions in Belgium are as bad as ever. Disease is prevalent and the doctors are working like Trojans under great handicaps. We earnestly hope therefore that any one who has not contributed to any of the various Funds will do so as soon as possible.

Following is a list of contributions received since the January issue of AMERICAN MEDICINE went to press:

Amount previously acknowledged....	\$1,252.75
I. O. M., St. Albans, Vt.	2.00
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Respectfully submitted,

H. EDWIN LEWIS,

For the Committee American

Fund for Belgian Physicians.



MEAT POISONING WITH REPORT OF CASES.

BY

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The scope of this paper is confined strictly to the important types of meat poisoning, with special reference to that type known as botulismus. A vast amount of work has been recently undertaken and presented along these and similar lines, but most of it has been of a basic nature, and mainly concerned with the technical determination and differentiation of untimate causes. I wish, therefore, at this time, to present a somewhat general view of the practical and clinical sides of the subject, even at the risk of throwing out of focus some of the finer details of research and discussion.

In studying the literature, and also in speaking with physicians, I have found that a few of the common terms employed are accepted with widely different interpretations. It will, therefore, be profitable to define them at the start, not dogmatically, but merely as a common denominator of understanding for the purposes of this paper.

1. *Ptomaine*.—A non-specific, alkaloidal poison; a half-way decomposition product of proteins when acted upon by putrefactive bacteria.

2. *Leukomaine*.—(Gautier) An autolytic, non-specific, half-way decomposition product. Formed by the action of self-contained enzymes, and not by bacteria.

3. *Toxin*.—A specific, poisonous proteid; the secretory or excretory product of bacterial life.

4. *Intoxication*.—A morbid condition caused by absorption of poisonous *non-living* matter.

5. *Infection*.—An invasion and the morbid results of an invasion by *living* pathogenic or putrefactive bacteria.

In regard to the ptomaines and leukomaines, it may be said that these bodies which were originally held by Brieger, Gautier, Selmi, Vaughn and Novy, to be responsible for most of the epidemics of meat poisoning, are found to have very restricted etiological possibilities. The idea of the great toxicity of ptomaines was based upon experiments by intravenous injection. Later experiments show that when absorbed in a normal manner from the gastrointestinal tract, most ptomaines can produce only the milder forms of irritation and intoxication. A very few of them, and these quite infrequently encountered, do not produce serious manifestations. Among these rarer and more poisonous ptomaines are the following: Cholin and mytilotoxin (the latter from mussels), act upon the central nervous system and have at times caused severe symptoms. Trytoxicon from putrid milk and cheese, and mydalein from putrid viscera are responsible for severe, and sometimes fatal gastroenteric irritation.

A profound intoxication, or virulent infection, due to the eating of contaminated

food, is *not* due to ptomaines or leukomaines, except in rare cases.

Food poisoning in a vast majority of cases is due to the action of living bacteria and their toxins. Van Ermingen in studying over 112 epidemics of food poisoning, affecting over one thousand persons, found that in 103 epidemics (or 92%) the meat was taken from animals suffering from septicemia, pyemia, enteritis, and other well-marked bacterial diseases. These bacteria may have been present before death in the animal from which the food was obtained (usually *bacillus enteritis* and allied organisms), or may have infected the food subsequently through careless handling or inadequate preservation (usually *bacillus proteus*, *coli*, or *botulinus*). In either case, the eater of such food may suffer from toxic effects either immediately, from absorption of the pre-formed toxins, or if the amount of toxins is small relative to the number of bacteria, after a period of incubation. The term "Food Poisoning", should, in most cases, therefore, be replaced by the truer term "Food Infection."

Very often both the bacteria and their toxins are very unevenly scattered through meat. In such cases it is easy to conceive how one person, after eating a portion of such meat might present early and severe symptoms of intoxication from absorption of the toxin from a pocket of infection in which prolonged growth had autolysed the bacteria themselves, while another person having a portion of the same meat, containing a more recent infective focus, would present negligible early symptoms, and yet after a period of incubation suffer a severe infection. The period of incubation will of course vary according to the number, type and virulence of the invading organism, and also according to the resistance of

the individual. The largest and numerically most important group include the cases in which the *bacillus enteritis* and the *bacillus proteus* are found. These two organisms are merely the principal representatives of two types of closely related bacilli. The symptoms of the two types vary slightly, but not sufficiently to form a practical basis for diagnosis, treatment or prognosis, and one description may stand for all the members of the group.

The symptoms are usually preceded by a period of incubation varying from two to twelve hours. Sometimes on account of rapid absorption of toxins, the symptoms appear almost immediately after ingestion of the food. The attack usually resembles a well developed case of acute gastroenteritis. The stools are yellow, very offensive and fluid, and attended by colicky pains, vomiting and great prostration. There is frequently albuminuria, catarrhal pneumonia, urticaria or various transitory exanthemata.

Prognosis.—Mortality 2-4%. Complete recovery is the rule after a few days of marked prostration following the acute symptoms.

Treatment.—Evacuation and radical stimulation.

The symptoms of the second group are caused by the two types of *bacillus paratyphosus*, and are those of a mild form of enteric fever, closely resembling an abortive attack of typhoid. The incubation period varies from eight to eighteen days.

The third group, and that in which fall the cases to be reported in this paper, is caused by the *bacillus botulinus*.

Whether this is a pure intoxication, or whether the bacilli can multiply in the intestinal tract, is still a moot question. Some evidence on both sides has been shown. The

bacillus is probably capable of growth in the body.

The symptoms in this group show little gastrointestinal irritation and a marked predilection for the central nervous system. There is some constipation, and in many cases slight colicky pains and headache. *The cardinal symptoms are diplopia, strabismus, dilatation of the pupils, ptosis of the eyelids, dysphagia, huskiness of voice, or aphonia, diminished urine or anuria.*

The post mortem examination in this condition shows little, except lesions in the nervous system, the abnormal changes induced by the toxin being mainly confined to the cells of the grey matter of the cord and bulbar tracts. There is a rarefaction of the chromatin elements, and in violent cases degeneration of the protoplasmic granules, and even complete destruction of some of these cells.

Prognosis.—From this pathology it is clear why the mortality is high, and even the favorable cases are extremely slow in recovery, convalescence extending over weeks and even months. The mortality runs very high, but varies greatly as the degree and virulence of the infection: 40-60%.

Prophylaxis in meat poisoning is the most important treatment.

Raw animal food is dangerous, and while smoke curing, preserving, salting, etc., are effective in removing this danger in case of undiseased meat when thoroughly and carefully performed, the original danger is increased when the process is ineffectively done. Even diseased meat raw is less harmful than diseased meat half cured. The appearance and odor of meat is most unreliable as a guide to its soundness; however, meat which has a rancid, buttery smell seems especially likely to harbor undesirable bacteria.

Sausages are more liable to infection because, first, poor meat is often used, and second, because the curing is often defective, especially in the centers of large sausages. Blood and liver sausages are the most often at fault.

Brine used in salting should always be stronger than 10% NaCl.

Kempner isolated the *bacillus botulinus* from the feces of the hog, and Blumer suggests that the use of the stomach and intestine of this animal for sausage coverings is not devoid of danger. Various forms of meat have given rise to botulismus. Beef, veal, ham, corned beef and larded goose have all been implicated in one outbreak or another. Bail has shown experimentally that the organism can be transmitted by flies.

While thorough cooking destroys the toxin of the *bacillus botulinus*, it is important to know that even boiling for one-half hour does not affect the toxin of the *bacillus enteridis*, nor that of the *bacillus coli communis*. A few of the rarer toxins are also more or less proof against boiling.

Treatment.—The ideal treatment would be by antitoxin, and Kempner and Pollak have recently been able to produce a powerful anti-botulismus toxin from the serum of immunized goats, which is both protective and curative. So far it has not been used on human beings and is not available for use. For the present, therefore, treatment must consist of (1) early and complete evacuation, (2) neutralization of the toxin, (3) stimulation and (4) symptomatic treatment.

Calomel in large doses, castor oil, and salines are to be given, and whatever purging is done must be done before a possible paralysis of the bowel appears. Ipecac in some form will help to set up a current of glandular secretion into the intestine and to check to some extent absorption. Intes-

tinal antiseptics are of little value. Since the toxin is acid and destroyed quickly by an alkaline, saturation by sodium bicarbonate or carbonate would suggest itself. I believe it best administered intravenously in view of the intestinal conditions. Stimulation by strychnine will be necessary.

Diet should be liquid, concentrated and nutritious, and in the presence of choking is best given by nasal catheter or gavage. Rectal feeding is unsatisfactory. Edema of glottis may be met by ice externally, and if necessary, by incisions. Bronchopneumonia may develop and must be treated by the usual methods.

The after-treatment will consist of general tonic measures, and especial attention must be given to any muscular paralysis which may often persist; strychnine, galvanism and massage being the main reliance.

Before giving the reports of cases, I wish to quote Novy in Osler's *System* on the symptomatology of this condition, and to call attention to the very close parallel between symptoms of cases reported here and Novy's description.

"The symptoms which followed the eating of the suspected ham were those of the typical sausage poisoning. The onset was rather late, the first symptoms coming on from 20 to 24 hours, and in some 36 hours after the meal. Nausea, gastric pains, and vomiting were the effects first noted. In two instances there was diarrhea while in the others there was obstinate constipation, and retention of urine. *Visual disturbance developed in from 36 to 48 hours in all cases.* The patients complained of a fogging of the eyes and were soon unable to recognize persons about them. *More or less marked diplopia came on.* At the same time there was observed a *marked dilatation of the pupils* with a complete loss of reaction to

light, *ptosis of the eyelids*, and a peculiar stony stare. There was a sensation of burning thirst and strangling; *the swallowing of solid foods and even of liquids was difficult* and led to choking attacks. The mucous membrane of the mouth, nose and pharynx, was strongly reddened and covered with thick viscid secretion which caused violent attacks of coughing, and even of suffocation. In some there was suppression of salivary secretion, and the mucous membrane was dry and shiny. *The voice became dull, and complete aphonia was not infrequent.* *Extreme muscular weakness was general* and persisted for weeks. Notwithstanding these severe symptoms the respiration and circulation were unimpaired. The pulse never rose above ninety degrees, and the temperature remained normal. Recovery was slow, extending over several weeks and even months. In the fatal cases collapse, dyspnea, coma, or wild delirium, were observed shortly before death."

I quote the history of two cases by Dr. E. O. Palmer, of Hollywood, California, to whom I am indebted for their present use and with whom I saw the patients:

On the 24th of January Mr C. went to San Diego, and his wife went into the city, stopped in an apartment house with son; occupied room that had never been used before, using bathroom from which water had never been drawn; investigation showed that the faucet which they did not use had red lead in it; the cold water faucet which they did use was clean.

On the 27th Mr. C. returned, spent the night with his wife in the apartment. On the 28th had meals with the family. In the afternoon came home to open the house. While at the house, from subsequent history, we find that they ate some pieces of wiener-wurst which were in a cupboard uniced, being the remains of a meal they had eaten without any disagreeable symptoms on the 23rd before the trip to San Diego. That evening they returned to the

city; had supper with the family. The next morning—the 29th—Mrs. C. feeling well, came home; had some engagement to meet her husband in the afternoon. Mr. C. telephoned early in afternoon that he did not feel well, that he would come home instead of keeping the appointment. Mrs. C. also did not feel well; was glad to have him come home; saw spots, was dizzy, felt weak and her voice was weak.

On the 30th a physician, a relative of theirs, called, thought they were tired and bilious, gave them small doses of strychnine, also lapactic pills. The next morning—the 31st—they called me. Mrs. C. complained of languor, inability to articulate, bad taste in her mouth, unsteadiness of gait, bad breath. On examination found a woman of 64, somewhat thickened vessels; swollen teeth-indented tongue; thickly furred; sordes over mouth; heavy odor to breath; pyorrhea about all teeth; very weak; temperature slightly subnormal; pulse normal; respiration normal; eye reflexes normal; skin slightly moist. History showed that Mrs. C. lost her voice whenever greatly fatigued or depressed from any cause.

Mr. C. a man of 64; arteries much thickened. History of previous thrombosis a year ago. Staggered, walked with feet apart; complained of diplopia; inability to pick up things; not from lack of strength, but from lack of definiteness of motion; tongue swollen, tooth-marked; badly coated; heavy odor; mouth sordes; all teeth pyorrheic. No complaint of either stomach or intestinal discomfort. Both histories of previously having regular bowels, although constipated last day.

Diagnosis rested between some mineral poison, lead, mercury or zinc, or some intestinal toxemia. Fearing possible mercury gave repeated small doses of podophyllin, followed by a large dose of salts.

On the 1st of March symptoms increased, Mrs. C. confined to bed. Mr. C. unable to leave chair; both with diplopia; both with vertigo; both with thicker tongue; muffled voices; heavier breath; both having had free bowel evacuations.

On the 2nd of March seen by Dr. B. who held that Mr. C's. symptoms might all be due to an arteriosclerosis and intestinal retention. That Mrs. C. had evidently had some intestinal toxemia and with her habits

of weak voice when fatigued, might account for her symptoms. Advised elimination and stimulation if necessary.

On the 3rd prostration increased in both cases; all other conditions continued. Difficulty in swallowing noticed.

On the 4th found Mr. C. hemoglobin 85%, Mrs. C. 90%. No evidence of basic granulation of red cells, eliminating lead poisoning. Test of urine for mercury was also negative. Mrs. C. unable to swallow liquids, rectal feeding commenced; strychnine hypodermically; temperature sub-normal; pulse below 100. Night of 4th rectum ceased to retain nourishment or normal saline colon flushing.

Morning of 5th Mrs. C. died from inanition, having had no paralysis, but general weakness; heart and respiration seemed to be equally good up to the last. Afternoon of 5th, autopsy. Found stomach and duodenum highly injected; mucous membrane thickened; liver congested; pancreas normal; kidneys normal. In the upper part jejunum were three or four pink rough patches on the peritoneum.

On the 6th Mr. C's. condition not much changed, except that he was weaker in all muscle action; no absolute paralysis found; choking on attempting to swallow small quantities of liquid, or even mucous in his throat. Rectal feeding objected to. Mental depression. Quality of pulse soft, about 90; temperature sub-normal.

On the 7th consultation with Dr. Joseph King, of Los Angeles. Dr. King, after having been giving this history, and before seeing the patient, and without knowledge of the patient having eaten the meat, which had not then been discovered, made a tentative diagnosis of botulism infection. On arriving at the house the nurse met us at the door, stating that she had found the cause of the trouble, and presented a plate with two nubbins of dried wiener-wurst and some cracker crumbs. On close questioning, the patient, by nodding approval to my suggestions, was able to affirm that upon the afternoon before stated, while he and his wife were preparing the house for occupancy, they had found these bits of sausage, from which they had safely eaten before the trip to San Diego, and both of them ate a small quantity by way of lunch, not interfering with their regular meals at the home of their son. This, with a further examina-

tion, confirmed the diagnosis of Dr. K., and the prognosis seemed to us hopeless.

On the 8th symptoms somewhat increased over the day before, particularly in the thickness of the tongue, density of the coat, weakness in attempts at conversation, and difficulty in changing position. Rectum tender from feeding and flushing; inability to hold the flushing sufficiently to be effectual.

On the 9th stimulation required; feeble pulse; rectal feeding no longer retained; feeding through the nostril by catheter begun; caused choking, and was given up.

Morning of 10th died of inanition; heart and respiration both seemed to fail simultaneously.

The following case, another of Dr. Palmer's, was seen twice by me. I quote Dr. Palmer's history:

Mr. H. R. M. 3/30/12. Botulismus. Age 49. Personal history: Abscess; frontal sinus drained 1899. Dyspeptic some years, up to about four years ago, when he cut meat from his dietary, and has been healthy ever since. Bowels regular.

Present Illness. 3/27/11. Lunch at a 7th Street popular cafe and ate a large portion of calf's head with vinegar. This was the first eaten in years. Dinner at home, mutton chops.

Next day, 28th, lunch at home, bacon and eggs; no other meat eaten that day. All meals at home, and all partaken of by family. The same evening, thirty hours after eating calf's head, had indigestion, took a cascaret. Next morning no action; took sal-hepatica; vomited. At 6 p. m. saw spots; saw double; dizzy; took calomel gr. iii divided doses. 3/30, took magnesia citrate, which seemed to irritate stomach; voice muffled; tongue thick, hard to swallow; could not swallow toast. More dizziness, spots before eyes, diplopia, bad taste in mouth, uneasy feeling in pit of stomach, weak, fumbles with hands. Urinalysis: sp. Gr. 1020; very acid; Alb. none; Sug. none; microscopical examination not made. Conjunctiva, yellow (slight). Tongue thickly coated, moist, swollen, tooth marks along border; breath heavy; epigastrium slightly tender, otherwise no tenderness or abnormality found. Abdomen flat; heart sounds normal; quality good; reflexes O. K.

Treatment. Calomel gr. X Pulvis Jalap Co. gr. XX. Sodii carb. dram i. in water Oi. high enema every 3 hours. Emetin gr. 1/67 every hour to nausea. No albumins. Cereal gruel diet.

3/31. 9 a. m. T. 97, P. 88, less firm. Calomel and Jalap came through 1st enema. Enema (now clear) followed by emesis streaked with black blood, much mucus from mouth; difficult to swallow liquids. Reflexes O. K. Tongue more swollen. Diplopia continuous. Mucus in trachea causes choking frequently. One attack while I was present—black in face, pupils large—no nourishment taken—face looks spongy.

Treatment. Oleum Ricini 1 ounce. Continue enemata, whiskey one-half ounce, strychnine grs. 1/30 by hypo every 6 hours.

3/31. 4 p. m. Sudden call, found Dr. H. examining throat; instruments at hand, discussing tracheotomy. Black, blood-streaked vomitus; oil had been vomited, no stool since. Reflex dyspnea, inhalation of vomitus of croupy character, larynx and epiglottis slightly anemic, no edema, tongue moist, cleaner than in a. m., general condition not changed. Enemata followed by emesis, emesis by choking—extreme apprehension of choking to death.

Treatment. Ice to neck, mustard to stomach. Strychnine grs. 1/30 every 6 hours. Heroin grs. 1/12, for sleep. Stopped all other alimentation or medication.

4/1. 9 a. m. Mouth clean, tongue cleaner, less swollen, diplopia less marked—speaks better—choking stopped. Less mucus from mouth. No blood in regurgitated vomitus. Feels weak but comfortable. Skin dry. T. 97 6/10, P. 100 (good quality), R. 22. No nourishment since previous observation.

Treatment. Strychnine grs. 1/30 adrenalin 1/1000 5 drops by hypo alternate 6 hours. Peptonized milk 6 oz. every 4 hours with one dram whiskey. Sodii carb. 1 dram in 6 oz. water, 1 hour before each second feeding by enema.

4/1. p. m. T. 98, P. 100, R. 22. No diplopia, tongue clearing but swollen.

Treatment. Colon flushing every 5 feedings.

4/2. a. m. T. 98½, P. 99, R. 20. Eyes as yesterday, pulse firm, speaking voice improved, general appearance not changed. Rectal feeding did not cause nausea.

4/2. p. m. Weaker in pulse, cannot swallow water, enemas streaked with black blood increased. T. 98.6, P. 92, soft, weak, eyes same.

Treatment. Strychnine 1/30, emetin 2/67 in colon feeding 4 hours. Hot pack at night, colon flushing a. m.

4/3. All symptoms improved, no vertigo or diplopia, weaker, retained all rectal feedings, cannot swallow saliva, no regurgitation from stomach.

Treatment. The same continued, except ice pack on throat.

4/4. Weaker, tongue clean, pink but swollen.

4/5. Noon. Died suddenly after choking attack. Had been growing weaker all morning. 10 minutes before attack T. 102, P. 148, R. 36, with all the signs of a terminal bronchopneumonia.

The most serious epidemic of food poisoning reported from this section in a number of years was that of a family in Sawtelle, in the early part of 1910. The cases were at first reported as being due to poisoning following the ingestion of preserved pears. In view of the very characteristic symptomatology and the fact that tamales are known certainly to have been eaten by at least a majority of those affected I have little hesitation in offering to amend the diagnosis to that of botulism, due to contaminated tamales. There is in the literature which I searched no case of bacterial poisoning from sugary preserved fruits, and all theoretical evidence would deny the possibility of such.

Out of the twelve cases, eleven were fatal, and the symptoms in force were so similar in all that I shall take but one case as a type.

Mrs. G. Fernandez, age 31. At family dinner January 1, 1910, 4 p. m., ate a portion of tamales. First symptoms 12 hours later. Gastric pain and headache; worse next afternoon. Dr. G. W. Peck called. He found: slight paralysis and thickening of tongue; ptosis of eyelids; salivation and white coated tongue; incoordination of

muscles of neck; throat muscles partially paralyzed; could not swallow a teaspoonful of water without choking; no pain at this time, except over eyes; visual disturbance; pupils dilated; subnormal light reflex; accommodation normal; pulse 120; weak but regular; dyspnea; respirations 25-30; irregular; phonation difficult; skin cool and moist; no muscular contraction or twitching; no paralysis of extremities, but incoordination on attempting to walk. Intellect clear; progressive weakness and rapidity of respiration and pulse; coma for 2 hours before death, at 10:30 p. m., January 2nd.

Of these cases the average time from the meal to death 40 hours; maximum 63 hours, minimum 25 hours. Average time first symptoms appeared after the meal 23 hours; maximum 30 hours, minimum 2 hours. Average time from the first symptoms to death 18 hours, maximum 33 hours, minimum 18 hours.

6404 Hollywood Blvd.

DEFORMITIES IN CHILDREN AND THEIR TREATMENT.

BY

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To group comprehensively the subject of childhood deformity it is necessary to divide it into the two main divisions of:

I. Congenital Deformities.

II. Acquired Deformities.

Congenital deformity is one of the most unsatisfactory problems confronting the general practitioner. This is due to the fact that his labors are expected to be few and comparatively short, for when the baby is born his visits are but necessary ones, and unless he is called for some intercurrent disease he does not see the child again until the time has come to vaccinate it. It

is therefore not surprising that any irregularity in the formation of the baby—unless either extensive, or though circumscribed, quite apparent at birth—is usually first noticed by some one of the family or by the child's nurse. Thereupon the carelessness of the family doctor is expounded upon and the child is taken to the specialist for advice and treatment. Acquired deformities on the contrary are unhappily often overlooked without excuse. Rather often one experiences tuberculous affections treated for growing pains, light attacks of infantile paralysis adjudicated the imaginings of a nervous child and severe spinal curvatures overlooked on account of the carelessness of examination. Any sick child should be stripped and examined, for it cannot well explain its ills and symptoms.

Congenital Deformity. Under this comes the following grouping:

I. *Congenital deformity of central nervous origin:* (a) hydrocephalus; (b) spina bifida; (c) pseudo-hypertrophic muscular paralysis; (d) spastic palsies.

II. *Congenital deformity due to disease:* (a) chondrodystrophia fetalis; (b) congenital syphilis; (c) congenital rachitis; (d) fragillitas ossium; (e) Still's disease; (f) glandular defect or insufficiency.

III. *Congenital deformity due to imperfect development:* (a) congenital dislocation of the hip; (b) congenital rotary lateral spinal curvature; (c) congenital torticollis; (d) absence or underdevelopment of a bone or part; (e) static spinal curvature.

IV. *Congenital deformity due to uterine constriction:* (a) club foot; (b) amniotic amputation.

V. *Congenital deformity due to injury at partum:* (a) obstetrical paralysis (Erb.); (b) fracture; (c) dislocation.

Acquired Deformity. Under this comes the following grouping:

I. *Acquired deformity due to bone and joint disease:* (a) tuberculosis; (b) septicemia, pyemia; (c) osteomyelitis.

II. *Acquired deformity due to general illness:* (a) rickets; (b) pneumonia, typhoid; (c) rheumatism; (d) scurvy.

III. *Acquired deformity due to traumatism:* (a) dislocation; (b) fracture.

IV. *Acquired deformity due to nerve disease or inflammation:* (a) infantile paralysis; (b) cerebrospinal meningitis; (c) diphtheritic paralysis.

V. *Acquired deformity due to irregular muscular action:* (a) postural, lateral spinal curvature; (b) torticollis; (c) weak foot.

Congenital Deformities of Nervous Origin. Under this group the spastic palsies are by far most important and frequent. There are four groups, named according to the part or parts of the body affected:

(a) *Monoplegia:* one extremity; (b) *Hemiplegia:* one half of the body; (c) *Paraplegia:* both legs; (d) *Diplegia:* all four extremities. Of these monoplegia is the rarest, hemiplegia next so, the usual types are diplegia and especially paraplegia. The paralysis is a spastic one, the movements of the limbs incoordinate and uncontrolled, the muscles are rigid and manipulation of the limbs is unconsciously resisted. The mentality is rather often affected, from absolute idiocy and apathy to precocious brightness and hypersensitivity. Very early in life the paralysis may pass unnoticed, though in its actions the child appears clumsy and helpless. Later, when the condition becomes apparent, diagnosis is aided by the mental derangement and history.



Rotary Lateral Curvature.

FIG. 1. Beginning Treatment, Sept., 1910.

FIG. 2. Jan., 1913. (Treatment discontinued)



FIG. 3. Static Lateral Curvature of the Spine.

FIG. 4. Congenital Dislocation *both* hips. (Lordosis compensation).

Hydrocephalus and spina bifida are deformities of marked characteristics: the former more common. Pseudo-hypertrophic muscular paralysis becomes apparent only after a few years, when the child starts to walk; the increasing enlargement of the calves and lower limbs, compared to the atrophy of the trunk muscles, combined with awkwardness and weakness first draw attention to it.

Congenital syphilis and rickets play a good part—outside of the neuropathic affections—in causing a derangement or stunting of the growth of either one part of the body or the whole trunk. Thus we find *chondrodystrophia fetalis* with its general inhibition of skeletal growth, *fragilitas ossium* with its weakening of the bony structure and Still's disease with its joint involvements as well as other more common manifestations of these affections to be not so infrequent as generally imagined.

Congenital developmental deformities do not become very apparent until the child starts to walk, unless there is complete absence of some portion of a limb. Thus for instance congenital hip dislocation is rarely recognized until the time when the limp during locomotion draws our attention to it. This limp becomes increasingly apparent, and is a peculiar one—simulating the act of “stepping down stairs” that is lurching the body over toward the affected side if one joint alone is dislocated, or is the waddling gait with marked lordosis of the lumbar spine if both are out of place. Though the child complains of tiring occasionally it never has any definite pain; its general health remains good and the limb can be moved freely in every direction except abduction. This manipulation is painless, there is no atrophy of the leg

present, the head of the femur can be felt above Nélaton's line, is made more prominent by adducting the thigh, and the shortening of the leg can be overcome by rather gentle traction on the foot.

Congenital rotary lateral curvature of the spine is due to imperfect development of one or more of the vertebrae with consequent irregularity of growth and contour. This causes a deviation at that point of the spine with compensatory bending at another. Combined with this deviation, rotation of the spinal column develops at the point of primary deformity due to the unequal shape of the vertebrae. This rotation appears very early, extends to other parts of the column and soon becomes fixed.

Congenital torticollis, a relatively fixed malposition of the head upon the trunk, may become quite noticeable early in babyhood. If slight, it is usually only noticed after the child assumes the erect attitude, then increases more or less rapidly and painlessly. Inhibition of the movements of the head is only partial and in one direction. Rather early a compensatory distortion of the bones of the face and head takes place.

Congenital club-foot is not uncommon. It may affect one or both extremities of the baby, and is—even if slight—easily recognized early in life. If seen later its diagnostic features are that there is no history of sickness and the absence of true muscular paralysis or marked atrophy of the affected limb.

Amniotic band constrictions and amputations of the extremities are comparatively rare; one or more of the limbs may be affected with complete or partial severance of the part or parts.

The deformities due to injury at partum have become more infrequent as the tech-



FIG. 5. Dorsal Pott's Disease.



FIG. 6. Congenital Rickets.



FIG. 7. Ida A. M. Operated, June 6, 1912. Congenital Hip Dislocation.



FIG. 8. Ida A. M. December 13, 1913. After reduction and cure.

nique of accouchement has advanced. Obstetrical paralysis (Erb's Palsy) affects the upper extremity and is probably due to injury to a portion of the brachial nerve plexus. This produces a paralysis of the muscles supplied by it, causing a markedly distorted position of the arm in flexion and adduction combined with inhibition of its growth. The condition develops soon after birth and increases with each year.

Fractures of the bones or joint dislocations are conditions immediately apparent at birth.

Acquired Deformities. These are more easily recognized, for a definite history usually antedates their appearance. It is upon this and the clinical findings that the correct diagnosis of the existing condition rests.

In tuberculous bone and joint disease the parts of the body affected in relative frequency are: (1) spine; (2) hip; (3) knee; (4) ankle and other joints. No matter which portion is attacked there is usually this definite history. The child up to a certain time is well, then suffers from some acute illness, usually infectious in character. It does not recover properly and fully, then has an accident—such as a fall. Slowly it becomes restless, starts to complain of pain at some certain point or region, and with intermissions of rather good health gets these attacks more frequently and with greater intensity until it becomes invalided. The slowly progressive character as shown by the history, the steady loss of weight and strength, with the remissions and pain localization to some region, are diagnostic.

In spinal cases the three regions of the vertebral column give certain definite signs.

(a) *Cervical*: Torticollis or head drawn back with spasm—restricted motion—in all directions. Pain in chest region and diffi-

cult, grunting respiration.

(b) *Dorsal*: Pain in upper abdominal region, early development of knuckle, labored respiration, toe gait to prevent jarring.

(c) *Lumbar*: Lordosis, with stiff, waddling gait, pain in lower abdomen and front of thighs; flexion of thighs on body due to psoas spasm.

Hip joint disease causes a characteristic limp, early atrophy of the limb and pain referred to the inner side of the knee. The movements of the limb are restricted in all directions, and "night-cries" due to intense cramps in the thigh are frequent. Knee joint disease and ankle joint disease also produce limp, early atrophy of the limb and marked swelling of the joint with pain and spasm. Shoulder, elbow and wrist joint disease are rather rare in childhood.

Septicemic or pyemic bone and joint disease are usually fearfully rapid in their attack and course. The destruction of the bone is comparatively great, regarding the length of time of the affection. Systemic poisoning is usually marked.

Rickets, affecting the tensile strength of the bone structure is due to an early nutritional derangement. The bones soften and those exposed to wear and tear bend under the strain. Thus we find the lower extremities and the spine—with production of knock-knees, bow legs, and mobile kyphosis the points of predilection.

Pneumonia and typhoid may be followed by more or less irritative or destructive joint lesions with or without pus formation.

Scurvy—due to improper feeding causes in time with its other general physical derangements various multiple joint erosions.

Infantile paralysis is an acute inflammatory disease, usually with violent gastrointestinal symptoms, of short duration,



FIG. 9. Double Bow Legs.
(Acquired Rickets.)



FIG. 10. Taylor Brace and Chin Support for
treatment of high Dorsal Pott's Disease.



FIG. 11. Spica in the Treatment of Hip Joint
Disease.



FIG. 12. Double Club-Foot (congenital).

rapidly destructive to the nerve cells in the motor tract of the spinal cord; followed by more or less complete paralysis of the muscles supplied by these centers. The paralysis is a flaccid one with loss of power and function in the group or groups of muscles affected, and consequent atrophy; also distortion of the limbs on account of the irregularity of its distribution. Sensation is not affected.

In cerebrospinal meningitis we have an acute inflammatory disease of the cerebral meninges, with damage to the brain itself. The paralysis resultant therefrom is evenly distributed over one or more limbs, or an entire side. It is spastic in character, that is, the muscles are rather overexcited than palsied and there is not much atrophy. The mentality of the child may be affected. Hemiplegia is the common result.

Lateral curvature of the spine acquired in early childhood is due to poor nutrition and consistent poor position. It increases slowly and is usually not combined with rotation or stiffness until later. This must not be confused with a rather rare condition termed static lateral curvature of the spine. Although this also rarely terminates in rotary as well as lateral deviation, it is due to a congenital irregularity in the length of one leg whereby the sinking of the pelvis on the affected side causes the compensatory deviation of the spine.

Acquired torticollis may be due to strain, traumatism, or to irritation of the glands or muscles of the neck. It is generally painful, especially at first, and does not cause deformity of the face or neck.

Weak foot in children is rather frequent. Its cause is entirely developmental whether due to poor musculature, or stature or overproduction of body weight. It is of course only recognized after the child walks

for some time, and then usually on account of the in-toeing gait. This pigeon-toeing on the part of the child while walking is due to its unconscious natural desire to counteract the foot weakness, and is so often wrongly diagnosed and falsely treated as to deserve mention.

Treatment. The treatment of childhood deformity, is one of the most gratifying specialties in medicine. Notwithstanding the fact that there are some types of disease—such as pseudo-hypertrophic muscular paralysis, and others that are practically hopeless, and although its progress is slow, the results from treatment carefully and advisedly undertaken are generally satisfactory. Even in the worst cases slight improvement means much, in the lighter ones complete cure may be reached. The more difficult type of deformity to influence is the congenital variety. This is due to the fact, that not only have we the distortion to treat but must also overcome the underlying inherited disease, predisposition or weakness.

Congenital spastic paralysis if combined with idiocy is nearly hopeless. Anti-syphilitic and tonic treatment must usually be instituted and the distortion gradually overcome in apparatus. The congenital spastic palsies without mental derangement and the acquired must both be treated educationally after any distortions of the limbs are as far as possible corrected under general anesthesia, and retained for some months in this overcorrected attitude by means of plaster of Paris splinting. This educational work consists of mental training, proper exercises slowly increasing, mechanotherapy and massage; added thereto, portable apparatus is fitted and worn so as to keep the limb properly balanced and to aid locomotion. Surgery in time may be of

great help; posterior nerve root cutting and alcohol nerve injection have not proved very helpful. Brain surgery will probably attain something. Sharpe of New York for instance reports very good results after the resection of flaps from each temporal bone and the removal of intracranial bone projection, thereby counteracting brain pressure and restriction.

Rickets, whether congenital or acquired, demands nutritional therapy. In congenital rickets thyroid gland has been found helpful; in acquired rickets diet regulation and phosphorus and lime ingestion are of main importance. The deformities due to the structural bone weakness should be overcome and controlled early by means of plaster of Paris bandaging and progressive wedging, proper braces and shoes and corrective manipulation often repeated. If overlooked until eburnation has occurred osteotomy must usually be done.

Congenital hip dislocation is not the bugbear of years ago, since the reduction first introduced by Lorenz of Vienna has become universally adopted. This reduction had best be deferred until the child is about two years old; for before that age the bony parts of the hip joint are not well developed and the child does not walk sufficiently to make the reposition permanent. It is the retention for one year or more of the leg in the corrected, fixed attitude which makes the cure possible.

Congenital lateral curvature of the spine if recognized early may be benefited by keeping the child on a gas pipe frame for several years if necessary; following this with proper bracing and exercise. Later in child life—when treatment unhappily is usually first begun—the deformity can no longer be cured. Stern measures by means of very heavy exercising and stretching and

jacket wearing only help. In the last few years Dr. Abbott of Portland, Me., offered a new forcible correction, the underlying principle being to work with the deformity, act directly upon the spine itself and retain this corrected position with slight forward flexion of the trunk in an extremely severe plaster of Paris jacket. Though apparently ideal, general reports agree that its results are not much better than heretofore; its effect on general health is bad.

For torticollis, whether congenital or acquired, the causative act must first be removed. Then manipulation, stretching, support, overcorrection or operation become necessary. The treatment of congenital club foot can not be begun too early. Overcorrection, not only correction, is imperative, and long—years long—continued retention of this overcorrection is of greatest importance. At first—between the age of two months to about 10 months—adhesive plaster may be employed. The rather readily corrected little foot is manipulated without anesthesia about every ten days to two weeks. Then—increasing with each treatment the abducted and dorsi flexed position of the foot upon the leg—adhesive plaster strips are applied to retain the correction between treatments. At about the age of ten months or a year one can begin with plaster of Paris bandaging. The correction can be undertaken under general anesthesia, or if there is no spasm and resistance remaining, without it. About every 8-10 weeks more correcting and rebandaging occurs. When the child has fully learned to walk and the varus and equinus have been well overcome a brace may be made for the foot. This brace must fit well and hold the parts thoroughly—but at the same time it should be comfortable, for it must be worn for several years. The

shoe of the affected foot is to be built up along its outer border. In the extreme type of club foot—usually delayed and neglected cases—ostetomy, tenotomy and bone implantation may become necessary.

Obstetrical paralysis should receive—if recognized early—rest treatment with the arm fixed at right angle abduction to the trunk. Later local counter-irritation with heat or the high-frequency current over the nerve trunks can be applied, and the entire limb massaged daily. The abduction must be long continued; prognosis is not the best as the arm remains stunted. Operative measures advised by Thomas of Philadelphia, and Taylor of New York, may in time lead to better results, though as yet their theories are at complete variance, one believing the joint dislocation to be the causative basis, the other nerve root involvement and change alone.

The treatment of tuberculosis of the bones and joints covers a very large field. The basic principle of its management is rest, immobilization of the diseased part, and the employment of general hygienic and medicinal measures to overcome the systematic weakness and poisoning. With rest is meant rational introduction of the recumbent attitude where demanded and mental rest from excitement, irritation or noisy surroundings. Immobilization of the diseased part can be brought about by all manner of means, the amount and variety depends entirely upon the severity and stage of the disease and the general condition of the child. For all around fixation of parts, proper snug and light plaster of Paris bandaging well padded is most satisfactory. The general hygienic and medicinal measures fit any tuberculous disease, with this difference that children with bone and joint tuberculosis do much better in

fresh sea air and in properly managed cripple institutions than in high mountain altitudes and institutions for the treatment or general tuberculosis. Besides this operative interference is sometimes imperative. Thus a well filled abscess must be punctured and drained or a badly diseased bone must be removed. The method of fixing the spine in Potts' disease either by means of the insertion of a bone transplant into the divided spinous processes or by means of crushing these spinous processes themselves is still uncertain and open to doubt and discussion.

Septicemia and pyemia, fracture and dislocation all need surgical interference of such kind and character as the condition found indicates.

Postural lateral curvature of the spine if noticed early enough in childhood can by means of school-hour regulation, rest periods, proper chairs, corrective exercises and massage be greatly benefited, in fact often overcome. Later—even when quite prominent but before rotation or stiffness have occurred—much can be accomplished by means of home-work, calisthenics carefully done under guidance with the back exposed, manipulation and massage of the back, slight and light spinal support and daily recumbency in the "Gyp's—Bett" (plaster of Paris bed). Rotation and spasm make the prognosis poor. Of course if the spinal curvature is due to any other cause—such as irregularity in the length of the legs, malunion of a fracture of some extremity, or paralysis of any kind—this cause must in as far as possible be first overcome before any influence can be brought to bear on the curvature.

The treatment of weak foot depends on the age of the child and the extent of the deformity. In its first stages, the simple

building up of the sole and heel of the shoe along its inner border will prove quite sufficient. The type of shoe had best be the simple orthopedic, without any incorporated brace or ankle corset lacing. If the weak foot has become more marked a Whitman foot plate made to the plaster of Paris cast of each foot should be slipped into the shoe and worn with occasional correction and raising for several years. In the extreme type with spasm and complete flattening of the long arch—"flat-foot"—which is happily rare in children, corrective manipulation under general anesthesia with plaster of Paris retention in the extreme corrected position; followed later by adhesive plaster strapping, plates and proper shoes become necessary.

Infantile paralysis—better known as anterior poliomyelitis—affects the children in very many different ways. The irregular distribution of its paralysis and the means employed to combat it are of such great variety that I will not endeavor to describe its orthopedic treatment—be it medico-mechanical, by means of apparatus or braces, exercise or electricity, or operative—of its paralytic after effects and distortions. Of just as great importance in a measure is the early recognition of the acute attack, for prevention at this time instituted will do much to counteract later distortion. As to the matter of prevention I have found absolute immobilization in the recumbent attitude enforced at as early a date during or after the acute attack as possible, and continued for from 6 to 10 weeks, of great benefit. This is best carried out by means of the gas pipe frame, upon which a child even up to the age of 5 or 6 years can be firmly strapped; and on which it can be carried around to any desired place without injury to the damaged spinal

cord. If we combine with this proper and necessary medication, local antiphlogistic applications over the spine as soon as possible and supportive pads to prevent any distortion or overstretching of the affected limbs, we may be sure to assist nature much more in repairing the damage done than by hysterically applying active measures to the spine while its nerve element is still acutely inflamed and damaged.

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A FEW COMMON FALLACIES IN THERAPEUTICS.¹

BY

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A continuation of methods of the preceding generation, spells disaster for a commercial enterprise; a farmer tilling his fields after the primitive fashion of his forefathers of colonial days is inviting poverty to be his yoke-mate; a great railway system, abandoning modern methods of financing and operating for the then sufficient, but now antiquated system of a half century ago, is advertising for a receiver. A physician, by all rules of analogy, who hugs to his bosom the empiricisms of the eighteenth century, is flirting with therapeutic disappointment and courting failure in material concerns.

It would appear that a mind trained in intellectual pursuits, that has served its cadetship in a scientific training school and taught to cleave straight through the non-essentials to the vitals of a postulate, would reveal that pliancy of thought necessary to adjustment to new facts, enabling it to

¹ Read before the Society of Physicians and Surgeons, of Louisville, Kentucky, October, 1914.

avoid rash enthusiasm for the new but hardly proven, or worship at the shrine of venerable practices of honorable but unscientific parentage.

Local Use of Opium.—Since opium became known to early healers as a powerful anodyne to outraged sensory nerves, and now recognized as the type of symptom remedies when internally administered, the medical profession has been using it locally to relieve pain. A hoary heritage, we have apparently been unable to lay rebellious hands upon the custom and having attended to its demise accord it a respectable funeral. "If thine conjunctiva offend thee, anoint it with opium," is today a therapeutic tenet almost as universal as in the days of the illustrious Hunter and the lamented Rush. Morphine as an ingredient of collyrii constitutes an almost routine procedure with a large element of otherwise sensible doctors. And yet opium relieves pain wholly because of its central action upon sensory nerve cells.

If some of our confreres had to abandon laudanum and lead water as topical remedies in sprained joints, contusions and inflamed joints, they would feel as if the tide of pharmacological inquiry had swept away the Rock of Ages instead of a hillock of sand. The direct application of a morphine solution to an exposed nerve end exerts no more than a general protoplasmic toxic effect and does not render it insensible to mechanical, chemical or thermal insult. How, then, can obtunding of sensation to the extent of physical comfort be obtained by the application of tincture of opium to cutaneous structures, when the nerves of an inflamed joint structure are crying out a protest to bacterial invasion? As well endeavor to protect Belgium from Teutonic invasion by whitewashing her fences, as to

anesthetize your professional conscience by the assumption that the comfort of a sufferer has been secured through the local use of opium.

Calomel as an Hepatic Stimulant.—

And, then, there is the poor liver and its abject subservience to calomel domination. No feudal baron ever received more humble allegiance from a vassal, than the "come hop on my thumb" arrogance calomel is alleged in the bill of particulars by both the laity and the medical profession, to demand of the greatest gland in the human body. What, however, are the facts in the case of *Glandula Hepaticum* versus *Hydrargyrum Chloridum Mite*? Calomel in the main passes through the stomach unchanged and reaches the small intestine *as calomel*, a sparingly soluble mercurous salt producing by its presence a sufficient degree of irritation of sensory nerves to establish a reflex motor impulse resulting in increased peristalsis which hurries the liquid contents of the small intestine into the large bowel with little time for absorption. Peristalsis of the large intestine is inaugurated by three factors resulting in evacuation, viz.: (1) the waves of contraction induced in the small intestine continue uninterruptedly past the ileocecal junction to the sigmoid; (2) the presence of the contents in increased bulk due to limited time for absorption of fluid constituents plus the added mucus and serum from irritation; (3) the bile present in the gall-bladder, which is emptied into the duodenum and not utilized in the digestive process because of rapid transit reaching the large intestine in an unchanged state and acting as an irritant to the surprised mucous membrane of the large bowel. It is this bile which gives rise to the erroneous conclusion that calomel actually stimulates the liver to increased function. No in-

fluence whatever is exerted upon the liver by calomel—as *calomel*. The only possible manner by which the liver can be so influenced by drugs is through the proceeds of absorption, reaching the liver through the portal or general circulation, and coming in direct contact with the hepatic cells arousing them to greater activity. Calomel, being practically insoluble, cannot be thus disposed of. The only possible hepatic action calomel possesses is through the conversion of a fractional portion of a given dose into the bichloride by the hydrochloric acid in the stomach. The bichloride is freely soluble, passes readily into the circulation as an albuminate through combination with the albumins present in food, mucus and the blood, and reaches the liver where it does actually augment the production of bile. Calomel is a cholagogue, emptying the gall-bladder reflexly by its irritation of the duodenal mucosa, the bichloride of mercury is an hepatic stimulant augmenting the process of bile manufacture.

Normal Saline—Physiological salt solution has proved a veritable life saver in certain critical conditions. In acute anemia the rapid replacement of blood bulk by the venous route, hypodermic or proctoclysis, can be accomplished in no other manner as quickly and satisfactorily; as a diluent in highly charged toxemias of the blood its place is unchallenged. In chronic anemias its use as a therapeutic and physiologic measure is scientific to the last degree; but misguided enthusiasm and unripe therapeutic deduction have led to its useless and even harmful use in conditions clearly contraindicated. A vaso-motor paresis accompanied by cardiac motor depression with no loss of blood, as exhibited in chloroform narcosis, can only be harmed by adding bulk when the circulatory organs cannot take

care of even the normal quantity of blood. Undue distention of the veins, passive hyperemia of organs and even dilatation of the cardiac chambers, are the logical sequences of such meddlesome and pernicious therapy. Venous congestion is a constant post-mortem finding in these narcoses; why increase it by pouring salt solution into the vessels? Direct devitalizing and paralyzing action on nerve structure, vaso-motor, cardiac and central, is the trouble and the danger, and a comparatively inactive pharmacological fluid poured into the blood is illogical and unscientific.

Nitroglycerine.—When Brunton first suggested the use of the nitrites in angina pectoris, little I fancy did he opine that they (particularly nitroglycerine) would ever be so outrageously misunderstood as to be tagged a member of that heterogeneous group styled “cardiac stimulants,” and, verily, there are strange bed fellows in that group, more of which we hope to have the opportunity of saying at some future time. Nitroglycerine causes a rapid and profound fall of blood-pressure, the result of direct action upon the unstriated musculature of the arteries and veins, dilating the peripheral vessels particularly of the skin, the head, and abdominal organs. This direct action may be easily demonstrated by passing Ringer’s solution containing the drug in solution through the artery of an amputated extremity of an animal and measuring the quantity flowing from the vein. Its usefulness in certain conditions with increased arterial tension cannot be questioned, but in the light of our present knowledge why it should be used in such conditions as chloroform narcosis seems impossible to answer.

Iron in Erysipelas.—The writer has a very vivid memory of the well-intended but futile endeavor of the physician in attend-

ance to make of him a repository of all the drug iron in the community during an attack of erysipelas. Half teaspoonfuls of the tincture of the chloride of iron every three hours were ordered and "kept up" or rather "kept down" for the first few doses, and then discontinued since "keeping up" the administration failed to "keep down" the agent! Erysipelas is an acute process involving superficial structures, and is caused by a specific organism which has gained entrance through a break in continuity of the skin. It tends toward recovery in three or four days under no treatment through the development of antibodies analogous to any other transmissible disease. The internal administration of iron accomplishes but the single effect of increasing the blood-iron—hemoglobin. It has no other systemic action since its effects in the gastrointestinal system are purely local, and this action through the red blood-cells occurs only in those cases where the hemoglobin is below normal. The hemoglobin cannot be increased beyond 100% by iron administration. Erysipelas develops in persons with a normal iron content just as certainly as in those having less than 100%. Iron could possibly do no good in the normal blood cases. Let us see if it could in those already anemic. It has been determined that less than one grain of iron can be absorbed from the intestinal mucosa in twenty-four hours, regardless of the degree of anemia or the form of iron administered, and that this rate diminishes daily as the hemoglobin increases. The amount of iron, then, that could be introduced into the system during the few days that erysipelas lasts is well nigh negligible.

Suprarenal Gland in Pulmonary Hemorrhage.—Hemorrhages, like convulsions, alarm the laity and generally mean a hasty

summons of the physician. Pulmonary hemorrhage is peculiarly distressing in the anxiety and fear it produces. As a matter of fact, this condition is usually of tubercular origin, and rarely fatal so far as its initial occurrence is concerned. The doctor who administers suprarenal gland to control the hemorrhage must be sharing the excitement of the patient and family. Suprarenal gland contracts blood-vessels more powerfully and spectacularly than any other agent, but this is not a uniform effect upon all vessels alike. The pulmonary and cerebral vessels are notably exempt from the constrictor action of the gland. The reason for this is anatomic: The pulmonary vessels do not receive their nerve supply from the thoracico-lumbar cord which bears the brunt of suprarenal action. Not only does the gland not contract the pulmonary blood-vessels, but on account of the tremendous constriction of those vessels under splanchnic influence, the blood is actually diverted from the abdominal viscera to the vessels not affected, such as those of the lung, the heart and brain, which become actually congested through passive dilatation. Suprarenal gland, therefore, may not only do no good in pulmonary hemorrhage, but may actually do harm.

Strychnine as a Cardiac Stimulant.—

Our conception of the action of strychnine on the circulatory organs has undergone marked change during the past five years. Probably ninety-nine per cent. of the profession carry strychnine in their hypodermic cases and use it as an emergency tool in everything from ordinary syncope to cerebral apoplexy. The drug has a demonstrable effect upon the central vasomotor system, which is but a partial expression of its general central nervous system action, and which fortunately develops before convul-

sive symptoms appear. Denis says that "a rise in blood-pressure in normal animals can occur only after a distinct increase in reflex excitability of the spinal cord and motor centers." Crile does not believe it has any value in the low pressure of shock. Cabot has not been able to find any improvement in blood-pressure in many conditions in which it is ordinarily used. Cushing states that it has no direct action upon the heart though the rate is slowed by stimulation of the inhibitory centers. Gottlieb calls attention to the depression and paralysis which always begin to appear during the early stage of strychnine stimulation. Cameron claims to have demonstrated a direct cardiac action. Out of this maze it seems possible to deduce a few facts: (1) there is no question as to its vasomotor action; (2) the cardiac influence can be of little value except as an end result through vasomotor action; (3) the time required for beneficial effects is too long for service as an emergency agent; and (4) it is more properly a circulatory tonic than stimulant.

ACTINO THERAPY.

BY

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Actinotherapy or radiotherapy is a general term to include the application of all the shorter ether rays in the treatment

The above article is a chapter in the work on "Medical Ethnology" soon to be issued by Reiman Company, Publishers, New York. In former chapters, it is shown that the effect of small doses of all ether waves, is to increase the movements of molecules, atoms and corpuscles. This irritation causes increased activity and we call it stimulating. Later exhaustion follows in the case of protoplasm. In large amounts the effect is invariably lethal to protein from the disruption of the molecules or atoms and consequent destruction of the protein as a chemical substance.

of disease—heat, light, ultra-violet, X-rays and radium. Thermotherapy or the use of infra-red has been practiced empirically for thousands of years in the primitive "sweat-houses" of savages, and perhaps also a species of phototherapy in sun-baths, though both probably did more harm than good. The modern scientific use of short rays began in 1894 with *Finsen's* publication of the amazing cures of lupus by means of concentrated sunlight. A year later *Röntgen* announced the discovery of X-rays. In a short time they were found to have biologic effects, and were used therapeutically. Then came the discovery of radium and its effect upon living tissue. The literature of actinotherapy had already become enormous, but the last discovery started this system of cure on a course of advancement which has elevated to a science of its own, with which but few practitioners can keep pace. Even a synopsis is impracticable here. Only those facts will be taken up which show why sunshine should have such widely different effects on different races.

After the first therapeutic successes, the profession became unduly enthusiastic and made claims and predictions which were not verified. Then came a reactionary period of five or six years after 1905, in which actinotherapy was considered inefficient or dangerous. Continued observations have shown its limitations and clearly outlined its sphere of usefulness. At present, the effects of short rays are so well known that the therapeutic applications are in very exact dosage to produce exact results.

Finsen, the pioneer, made the first false assumption. He knew of the bactericidal effects of ultra-violet rays and used them to kill the tubercle bacilli in the skin in lupus.

He went to his death convinced that his wonderful cures had been due to the destruction of the bacilli in the skin. Many imitators have vainly tried to kill the bacilli in deeper lesions and so far with no success and possibly much harm, for few seemed to realize that if the bacilli could be killed so also would the surrounding cells. It was further assumed that pathological cells were composed of more complex molecules and would be destroyed by a dose harmless to the healthy.¹ This may be true—particularly as to the action of radium on superficial carcinomas, but it is yet to be proved. At present we have no other explanation than the proved fact that developing cells, healthy or pathological, are more susceptible to damage, as though the vibrations more easily broke up molecular groups or molecules while the chromosomes were in the unstable condition of karyokinesis.

It was first discovered² that though the violet and ultra-violet were the most bactericidal of sun's rays and caused a dermatitis the same as any other inflammation, they had the least power of penetrating the tissues. Not until after *Finsen's* death was it proved by *Jansen* that though the bacilli were not killed below 0.2 of a millimeter from the surface, there was severe exudation of blood and serum, with thrombosis. The connective tissue cells were unharmed, and produced fibrous hyperplasia as after any other inflammation. He concluded that the sun's rays acted like a caustic and not as a germicide. Many others have come to the same conclusion. *Verhoeff* and *Bell* say:³ "So far as direct destruction of bacteria within the cornea or any of the tissues of the body is concerned, abiotic radiations possess no therapeutic value. This is due to the fact that

abiotic radiations that are able to penetrate the tissues are more destructive to the latter than to bacteria."

It was then realized that *Finsen's* cures were not due to any beneficent action of the rays, but to the irritation which caused an outflow of serum which brought more antibodies in contact with the bacilli, as in the *Bier* treatment by passive congestion. Hot applications seem to work the same way. "Hot rectal douches appear to be of use in the treatment of prostatitis, and probably produce their good effects by raising locally the opsonic index and by promoting a freer flow of blood through the inflamed parts."⁴

Dr. A. C. Geyser of New York and others have shown that anemia, local or general, is a prerequisite to the spread of tuberculosis, but that congestion is preventive or curative. Men with leaky mitrals rarely have tuberculosis of the lungs, nor do those with small lungs and big hearts.

The same explanation has been given by the late *Dr. Ferd. C. Valentine*, of New York City, of the remarkable efficacy of heat in all the gonorrheal infections. Being greatly impressed by the reports of the almost specific action of dry heat in curing gonorrheal arthritis, and by the fact that the gonococcus is destroyed at 113° F. or lower, some say as low as 104°, I tried hot irrigations in acute gonorrhea with success.⁵ *Dr. J. A. Fulton*, of Astoria, Oregon,⁶ and *Harrison* and *Houghton* of the British army⁷ by the same reasoning tried dry heat with equal success—they all used a double catheter in which water of a definite temperature is circulated. *Grünsputz* and *Faroy*⁸ used hot air. *Dr. Herman Strebel* apparently got just as good results in chronic gonorrhea from the prolonged irritation of a glow-light in the urethra, com-

pletely eliminating the infra-red by a complicated cooling apparatus.⁹

Serious effusion explains the remarkable efficacy of very hot irrigations in chancreoid¹⁰ and old ulcers.¹¹ The sun cure for Madagascar ulcers is similarly explained,¹² as also are the cures of diphtheria by a five-minute application of a current of air at 80° C.¹³ Though the bacilli are killed in one minute by 80°, they cannot be raised to that point without destroying the tissues. In corneal ulcers we cannot destroy bacteria without killing the tissue cells.¹⁴

The Jamaica negro is said to treat open wounds of the foot by exposure to the direct rays of the sun without dressings of any kind. These wounds are usually infected and become severe on account of the thick skin which prevents drainage, but by the sun treatment they become aseptic and heal kindly. Sunshine¹⁵ will cure persistent bed sore if concentrated once a day into the depths of the excavation. *Haeberlin*¹⁶ and many others have obtained quick healing of granulating surgical wounds or burns by sun exposure, but *H. Poth* obtains equal success by currents of very dry air.¹⁷

Minin reports excellent results with his blue electric light in checking hemorrhages from open wounds and in many conditions for which other wave lengths are equally efficacious or more so.¹⁸ For open wounds an electric light filtered through blue glass will ease pain, dry up secretions, facilitate epithelial growth and produce a general hyperemia.

Noma has been cured in two months by applications of a 16-candle power incandescent electric light with a red globe,¹⁹ and excellent results in skin diseases are obtained by light screened through two layers of glass containing a solution of eosin.²⁰

That is, almost any length of ray will by its irritation produce a curative effusion of serum if strong enough.

Stevens says²¹ that the *Finsen* light is best in lupus vulgaris and erythematosis, and that he uses it in xanthoma palpebrarum, some nevi, and alopecia areata. The *Kromayer* light is more dangerous, destructive and superficial, but gives excellent results in port-wine birth marks, alopecia and acute X-ray dermatitis and its later telangiectasis, and is recommended in acne, herpes, eczema, keloids, hypertrophic scars, pityriasis, ulcers, furuncle, vitiligo, etc. *Kime*, of Fort Dodge, Iowa, says²² that sun's rays focussed through glass and thus freed of most of the ultra-violet are more effective in warts, moles and small non-malignant growths. Passed through blue glass they blister without destroying deeper cells, and through opalescent glass they neither blister nor destroy but merely blanch as in freezing, and are therefore best in lupus and nevi. These discrepancies are probably due to variations in intensity.

Ultra-violet light will relieve the pain of superficial new growths, lessen the odor and putrefaction. It is sometimes successful in relieving uterine cancers of the distressing symptoms. The anesthetic powers of the shorter sun's rays have been successfully used in minor operations, neuralgia, acute or chronic neuritis, and muscular pains such as lumbago, torticollis and pleurodynia. The pains of tabes may also be relieved.

A. I. Orloff over ten years ago reported²³ that the ordinary electric light of five to sixteen candle power was quite efficacious in relieving uterine pains and lessening exudates and discharges, but this method of relief seems to have been abandoned.

In the case of erysipelas, variola, varicella, rubeola, scarlatina, pellagra and lupus—all parasitic diseases—it is believed that the toxins are unable to cause much inflammation of the skin, but that they render the cells more sensitive to irritation by light. On the basis of this theory there has been a revival in the last twenty years of the old discarded red light treatment to exclude the actinic rays. *Finsen* reported most excellent results in smallpox, but *J. F. Schamberg*, of Philadelphia, failed, and thought the treatment was suited only to mild cases such as are found in Europe. *Finsen*, in reply to critics, said that they began the treatment too late. *Piffard* said that *Schamberg's* red glass did not exclude the short rays like true ruby glass. Others have substantiated *Finsen*, and the question, after all these years, is still unsettled though little is said of it. Perhaps the new method of preventing the suppurations by early immunizing injections of staphylococcic and streptococcic vaccines will be more efficient in the dark or in red light.

Finsen said that the Chinese have used the red-light treatment of smallpox for many centuries. Throughout Europe in the Middle Ages, we find frequent references to the practice. *John* of Gallesden, the author of the earliest medical book in English, "*Rosa Medicinæ*," is reported to have successfully treated the son of Edward I by red light, and that the practice was common in the reigns of Elizabeth and Charles II. It is also said that in the Copenhagen Medical Library there is a medical pamphlet published by *Dr. Picton* of New Orleans in 1831, which mentions the fact that in a certain epidemic, a few soldiers confined in dark dungeons recovered without pitting.

Goldman, of Vienna,²⁴ found that by vac-

inating in red light and immediately bandaging with an opaque cloth, the inflammation was prevented, but if the bandage was removed in two or three days pustules appeared. There were no constitutional symptoms, the eruption was wart-like, scar flat and scarcely perceptible, and the immunity short. Perhaps he did not really vaccinate his cases at all. *Cuoff* reported²⁵ that the red light treatment in scarlet fever lessened the duration but did not diminish complications.

Cures of malignant tumors by X-rays have been reported by radiologists too numerous to mention, though the failures have been disheartening. It seems that the effect on the diseased cells may be destructive in time even if it is not immediately lethal. For this reason many if not most radiologists advise the application before or after an operation to influence the cells which may be beyond the reach of the surgeon. There seem to be fewer relapses. It is interesting to note that the best results are obtained by the very short rays from "hard" tubes, for these have very great penetration and can affect deep growths though not harming the overlying stable normal tissues. Modern success is due to these tubes which were unavailable in the early days.

The list of other diseases amenable to X-rays is now a very long one, providing the remedy is applied skilfully in proper doses of proper wave lengths and for a proper time—matters which are still somewhat empirical and to be decided by the judgment of an experienced operator. This very success is tempting the unskilled and inexperienced, so that we are hearing of more burns and other accidents than some years ago when the remedy was somewhat under a cloud of suspicion and ineffective-

ness. Among the diseases recorded as cured are warts, rhinophyma, sycosis, favus, acute and chronic eczema, psoriasis, sarcoma, ring-worm, rosacea, acne vulgaris, prurigo, lupus and nevus vasculosus. The ray is a depilatory, will make the nails and glands atrophy, and it causes pigmentation. *Skinner* and *Carson* of the British army have reported the cure of chronic malaria without quinine by a five-minute dose of X-ray to the enlarged spleen. In uterine myoma, the Germans report 50 per cent. cures and 30 per cent. improvement by X-ray, and equal success in uterine hemorrhages of all kinds. *Kronig* and *Gauss* of Freiburg are the originators of a practicable technique in these diseases.²⁶

There are still wide differences of opinion as to their value in surgical tuberculosis, though successes were reported in tuberculosis of the testicles. Leprosy and elephantiasis have apparently been cured, and exophthalmia improved. *Manonkim*, of St. Petersburg, is reported to have benefited or cured hemophilia by applications to the spleen to destroy the leucocytes. In all other cases the cures can be best explained by the serous overflow from the irritated healthy tissues.

For action on the skin and its diseases we need a soft or long X-ray which does not penetrate and we must exclude the very short penetrating frequencies. This has been accomplished by the use of a new glass mentioned by *Prof. Chas. Baskerville*,²⁷ in which lithium replaces potassium, beryllium replaces calcium, and boron replaces silicon. It has a much lower molecular weight and is more transparent to the long rays and more opaque to the short than the ordinary glass used in *Crooke's* tubes.

Radium has been used to cure lupus, rodent ulcer and superficial cancers for

over ten years, but only recently has the public taken up the matter as something new. Even in deep-seated growths a tube imbedded in the tumor for a certain time measured in hours and minutes will sometimes cause the complete disappearance of the mass in a few weeks, but the failures are more numerous by far than the successes. Indeed, the deep cells are sometimes stimulated. There are evidently different kinds of cancer having the same histological structure and different kinds of resistance in the normal cells. When these matters are cleared up, it will probably be found that short rays from any source will be specific according to their frequency and the kind of tumor. Some sarcomas seem to be as curable under short rays as the carcinomas, but we cannot differentiate the cases beforehand. Favorable reports have been made as to its use in trachoma, but as a bactericide it requires too long a time, twenty-four hours or more.

Radium seems to be more effective than X-ray in warts, moles, nevi and angiomas. Highly colored birth marks are the easiest to cure. In all cases the cure is due to the occlusion of vessels from the irritation. *Wickham* and *Degrais* of Paris have devised very ingenious methods of separating the alpha, beta and gamma rays, and a method of filtration and of "cross-firing" to increase the effect.

Sluggish metabolism seems to be stimulated by rays of every length. Hot air and hot water baths have long been used for this purpose, and in the last twenty years light baths have produced excellent results. A short sojourn in the tropics is very beneficial in many cases of chronic gout and rheumatism, but the ultimate result of too long a stay is exhaustion. It has been said that light stimulates circulation, metabolism

and sweat secretion, but since the usual light-bath cabinet is very hot, the effects of the heat are not differentiated in reported cases. As both act alike it is immaterial for practical purposes whether we use one or both. It has been charged that the heat alone is responsible, but the general impression seems to be that the shorter the ray the quicker and more powerful the result. *Musser and Edsall* found²⁸ that the X-ray increased the excretion of nitrogen, phosphorus acid, uric acid and xanthin bases and made pernicious anemia markedly worse. The number of cases of pernicious anemia arising in the tropics indicates that ultra-violet rays and perhaps slower waves have a decided influence in causing this disease or making it worse.

The preparations of radium, thorium and mesothorium are now being praised for all cases of sluggish metabolism in the same way that X-rays were a decade ago. The literature of this alone is already enormous. There has been a remarkable renewal of interest in the therapeutic properties of the spas of Europe since it has been discovered that the most popular with profession and laity are also the most radio-active. Indeed their efficacy has been imputed to their radio-activity. *Carl Von Norden's* article in the *New York Medical Record*,²⁹ and one by *Professor Ernest Zueblin*, *Maryland Medical Journal*, May, 1914, review the present status of radio-therapy, including the use of emanations.

Waves of all frequencies seem to be effective in reducing obesity. Cattle can be fattened quicker in dark barns than in light ones, and stout people often lose weight in hot seasons and hot climates when the light may be one factor at least. We are now informed that treatment by radio-active sub-

stances is also beneficial in obesity from the increased metabolism.

The use of short rays for anemia cannot be reconciled with the evidence that light destroys hemoglobin. The existence of a tropical anemia in white skinned migrants has been denied, but the evidence seems to show that it does exist and to point to the light as a cause. The error has been due to misinterpretation of blood counts in people who have been in the tropics too short a time. Short exposure may temporarily increase hemoglobin, since we know that it increases the absorption of iron,³⁰ but in the end hemoglobin is destroyed. It is claimed that excessive tanning robs the blood of hemoglobin and causes anemia.

Blackader reported³¹ that in Canada hemoglobin rapidly rises in the cold dark season. The increase of red blood cells in high altitudes may have some relation to the cold as well as to the lessened pressure. Since both X-ray and tropical light may cause or increase leucemia and pernicious anemia, we are justified in expecting the same in light baths, particularly in the blonds.

Ultra-violet rays have been used in neurasthenia and the benefit seems to be psychic for the testimony is almost unanimous that in time all short rays produce neurasthenia. The irritating effects of light are so evident in nervous people that it is now the rule with certain physicians to insist upon darkening the room. *Dr. G. R. Rowe*, of London, called attention to this in 1817, in his work on "Hypochondriasis." In describing the rest cure, in which he antedated *Weir Mitchell* by over a half century, he says³² that a darkened room prevents "the rays of light from offensively acting upon the retina and, consequently, the sensorium

commune." In more recent years the popular mania for floods of light has caused architects to overlight most hospital wards, houses and school-rooms and the nervousness of the inmates is increased. Formerly both patients and attendants considered the ill-feelings as part of the disease, and school-teachers blamed the natural perversity of children. In the treatment of maniacal states darkening the room is said to be remarkably soothing, but in depressed states the light is a beneficial stimulant. Avoidance of the direct rays of the sun is beneficial in hay fever, and *Jacobi*, in discussing the management of pneumonia at the American Climatological Society, warned against an excess of light.

Sun-baths to the naked body are slowly going out of fashion, except in obesity, gout, rheumatism, and sluggish metabolism. The profession has begun to realize how harmful the short rays may be. They increase the pulse, respiration, temperature and blood-pressure, and may start hemorrhages. In excess they cause headache, palpitation, insomnia and anemia. They are also harmful in general weakness from any cause and in the hysterical or neurasthenic. *Grawitz* called attention to the serious nervous results often seen in children exposed to sun-baths.³³ *Huddleston* found actual sunstroke in a child given a sun-bath for pneumonia.³⁴ Even the ancient Jews knew of the damage of sunshine, for the twelfth Psalm says: "The Lord is thy shade upon thy right hand"; "The sun shall not smite thee by day, nor the moon by night." Indeed there are innumerable references to their constant effort to escape the sun by the shade of one's vine and fig-tree. "The tree doth not withdraw its shade from the woodcutter."

The use of sun-baths to the naked body

of the tuberculous cannot be condemned too strongly, though it is highly praised by a few who get good results from the other factors in spite of the injury done by light. There is no question, of course, that all the short rays are as beneficial in local lesions as those from the sun are in lupus. But in all these cases there is every reason to believe that the cure is due to the irritating effect of the rays and the subsequent bactericidal effect of the increased flow of serum, and not to any beneficent effect on the body-cells. In light-baths the increased flow of blood is to the surface and causes anemia of the lesions. Indeed, *Charles Heater*, at a meeting of the Royal Society of Medicine, called attention to the fact that, in a person under tuberculin treatment, ultra-violet caused a more violent and prolonged effect, and that in using the quartz mercury lamp in skin affections in the tuberculous, exposures must be halved. The ordinary dose of sixty seconds will cause troublesome ulcers.

*Lenkei*³⁵ was so convinced of the efficacy of light that he carefully avoided giving enough to tan the skin, as he estimated that the clear skin let through 50 to 100 times more light than a darkly colored one. Yet *Rollier*, at Leysin, Switzerland, found that the blonds who would not tan did not improve under light-baths, while the best results were obtained in those who took on a heavy coat of tan. That is, the smaller the amount of light to penetrate the better the effect, but he explained it on the assumption that the light was changed into some mystical kind of energy, though it is only stepped down to infra-red frequencies in brunets and serious nervous effects were noticed in the blonds. Other physicians in Leysin get just as good results without sun-baths and better results in the blonds by

keeping them outdoors in the shade. In the cloudy lowlands of northern Europe equally good results are obtained, and one physician of Geneva takes his cases down to the Riviera in the winter with excellent results. *Rollier* also reports that large doses especially in blonds, sometimes cause acute attacks resembling actinic shock or heat exhaustion, and in time a chronic nervous condition differing in no respect from tropical neurasthenia. These states are accompanied by marked phosphaturia. The neurasthenia so common in adult consumptives seems to be made worse by sun exposures. *Knopf* of New York who advocates light "judiciously employed," whatever that means, has never furnished any proof that it is beneficial, but quotes in its favor very many worthless opinions from men who have never investigated it.

It is now claimed by *Martin-du-Pan* (*Revue Médicale de la Suisse Romande*, Sept., 1914), that surgical tuberculosis of children, unsuccessfully treated by outdoor heliotherapy can be cured or improved by indoor applications to the whole body of cooled light from the 7,000-candle power mercury vapor quartz lamp devised by *Vignard* of Lyons. But he found it necessary to exclude "some" of the ultra-violet rays by 4 mm. of glass. The skin rapidly tans and protects the tissues from further injury. The applications are made from ten minutes to three hours at a distance of several feet. *Jacques Loeb* found (*Science*, Nov. 6, 1914) that only one mm. of glass prevented all effects on sea urchin eggs of the ultra-violet light from the 3,000-candle power *Heraens* quartz mercury arc lamp even when applied sixty minutes at 15 cm. distance. A few minutes of the naked light kills. In other words, tuberculosis cases injured by sun-baths are cured by *Martin*

du-Pan by excluding the injurious ultra-violet. The whole subject of light-baths is of the same class as the *Perkins* tractors of the last century—not quackery but precious near it. *Rollier* makes \$100,000 a year from it, but his failures are cured by other physicians in the shade for ordinary fees. To keep up the popular delusion is one of the most cruel things in current medicine.

When *Bodington*, in 1840, discovered that consumptives were cured by outdoor life and that the improvement was due to the cold air, the British profession was horrified at his temerity in thus maltreating cases which they believed incurable and so delicate that confinement in hot stuffy rooms was necessary. So they drove him out of practice and closed his sanatorium. When it was proved forty years later that outdoor life was curative, the profession still refused to recognize cold air as the factor, but imputed it to a mystical influence of the light, utterly regardless of the fact that cures occurred in very cloudy climates. For instance, *Trudeau* put some tuberculous rabbits outdoors and kept some in the warm laboratory. The better condition of the former was invariably imputed to the sunshine. Not for many years was the real reason proved by *Lannelongue* and *Achard*, in some experiments thus described:³⁸ "They took several parcels of guinea-pigs of the same age and as far as possible the same weight, and the same day inoculated them in the peritoneal cavity with the same amount of the same culture of tubercle bacilli. Then these different parcels of animals were placed in different climatic conditions: The country, the sea-shore, the coast of La Mancha, high altitudes, the South, the North; the last lot was kept in the laboratory in a dark room, but with a window constantly open. The

guinea-pigs of each lot received daily the same food; whenever a pig died he was sent to the laboratory of *Lannelongue* for an autopsy. Those that resisted to the last were those in the laboratory." That is, *Trudeau's* rabbits would have lived longer in the shady laboratory if the air had been cold and constantly renewed.

The mania for sun-baths led to such harmful excesses that I published such facts as were available in the *New York Medical Journal*, September 12, 1908, as a reply to an article published in the same issue by *Dr. S. A. Knopf*, of New York City, who had been using this treatment in tuberculosis. Previously, the damage was noticed by quite a number, the first being *Ransom*, of Dannemora Prison in New York, who was the great pioneer in the prevention and cure of tuberculosis in convicts. If patients misbehaved, they were punished by being quartered in less desirable locations of the dormitory—the dark shady corners—but they improved so much faster than those in the sun that the shady places became the desirable ones. Then *White*, of Colorado Springs, noticed that those exposed to the sun had a rise of temperature and occasionally hemorrhage, so he learned to keep them in the shade. *Havorka* found that sun-baths produced headache, palpitation, insomnia and hemorrhages in consumptives.³⁷ Then it was noticed that in every part of the United States, the improvement occurred in the dark season but not in the light months—Easter to August. In the lightest months of the North, there was usually retrogression, and in the Southwest, the patients were compelled to leave certain climates in summer or perish. The summer deterioration is so great in the Riviera that the patients all leave for the mountains.

Then certain curious facts came to notice as to the incidence of tuberculosis in the trades. For instance, coal miners are remarkably free from tuberculosis though living much in the dark, but policemen and teamsters who live in the light are dreadfully prone to it. Rock miners are as badly affected as in any other dusty trade, a fact which may partly account for the bad record of policemen, yet street cleaners are said to be less affected than policemen. As a class miners have a rate of only 6.4, the smallest of any trade, while stonecutters have the largest, 43.1,³⁸ and the two classes have equal amounts of fresh air and dust. The reports of the Phipps Institute of Philadelphia show amazingly high rates of some outdoor workers and low rates of some indoor trades, but no generalization is possible as the factor of poverty varies so greatly.

In spite of all such well-known facts, *P. Juillerat* and *M. Davy* went to great pains to correlate consumption with the lack of windows and doors in the rooms and houses of Paris.³⁹ They found that the more the means of admitting fresh air the less is the tuberculosis rate, and then most illogically ascribed the improvement to the light admitted, although doors do not admit much light and do admit air. Moreover, the poorer families with more children per family, and more people per room, who took the upper apartments because the rent was cheaper, had less tuberculosis than in the less crowded, less ventilated lower floors, though the difference in light was not marked.

Even the matter of ventilation is misunderstood. It is not the foulness of the air which does harm so much as the heat and moisture. In the old sailing ships which were unheated, tuberculosis was

practically unknown, though the men's quarters were foul in the extreme. Much of their time was spent in the open and the life was recommended as a cure. The modern warship is vastly better ventilated, but is hot, and the men spend less time in the open. Tuberculosis is quite common, and a few years ago was alarming. This is also shown in the rapidity of tuberculosis in hot, moist climates, in the bad results of warm, moist inhalations in tuberculosis of the larynx,⁴⁰ and the fearful prevalence of tuberculosis in convicts confined in hot cells.

Practical experience also showed that the tuberculous must be protected from both light and heat.⁴¹ Even in England, with a minimum of sunshine, Sherwood Forest Sanitarium is so built as to shelter the verandas "from the wind in winter and the very warm sun in summer." The rooms with a southern exposure have "outside sun blinds and light inside curtains." In France the sanitariums at Caignon and the Riviera are closed in the summer. In Switzerland, Austria and Germany, those in the forest seem to be more successful than those in the open, and this has been thought to be due to some influence of the trees. In the United States, *Carling* states that the inland institutions for children are more successful than those on the sunny sea-shore. In the sanitariums of the suburbs of Berlin, it is found that the patients must rest at midday "in the cool shade."

The map prepared by *Koehler*⁴²-*Hillier* shows that, omitting Italy, the tuberculosis death-rate increases with the mean annual sunshine. London and Amsterdam, with all their poverty, overcrowding and fogs, have almost the least rates in the world, but the highest are in the sunny cities of Moscow, St. Petersburg and Vienna. The three

worst countries—Austria, Servia and Chili—are far from cloudy, but the three best, omitting Italy, which has cloudiness in the north, are the Netherlands, England and Belgium. The same phenomenon is found in America, the sunny South has more tuberculosis than the cloudier North, though much of the excess is the after-affect of typhoid fever and malaria, so prevalent in the South. Cases were very curable in the cloudy Adirondacks and in the smoke of Pittsburgh, but sunny Florida has been abandoned because of its bad results.

Burton Fanning noted the harm done by light⁴³ and Leonard W. Ely condemned the sanitariums which contain "beautiful sun-parlors to let in the sun and keep out the air,"⁴⁴ and we might also state that the usual "sun-bath" is not a sun-bath at all, for the patient is carefully enveloped in opaque clothing and the only effect is a painful glare in the face. *Malgat* applies the sun's rays to the chest only, as in surgical tuberculosis, carefully shielding the rest of the body.⁴⁵ He finds that if heat accompanies the light it may interfere with cure by causing tissue anemia and that the light may cause general anemia.

In the enormous amount of literature on the subject, there is not a single mention of any control experiments, such as treating two lots of children exactly alike in all respects except giving half sun-baths and shading the others. Nevertheless many physicians have taken it up seriously, and there is a curious agitation in the lay press in its favor. Few seem to know that living in cold air in the shade is a necessity of types evolved in the cold dark northwest part of Europe. Light may do no good whatever, but the more pigment there is in the skin the less is the harm. Black patients

can stand sun treatment which will promptly kill a nordic blond.

If guinea-pigs infected with tetanus are kept in cold air the disease is delayed or prevented, but hot air brings it out. Cold was therefore used in treating a human case in Omaha.⁴⁶ Malaria of both birds and man improves in cold weather, but recrudesces in summer before new infections are possible. Cold stimulates phagocytosis and constricts the superficial arterioles. Rats and guinea-pigs are much livelier in the cold room. After infection with trypanosomes, cold air delays incubation, checks the multiplication of the parasites and prolongs life.⁴⁷

The necessity for cool or cold air in the treatment of pneumonia in the lighter types of Europeans is a well-known fact. They deteriorate or die in hot weather. *Young* and *Williams*⁴⁸ show that outdoor treatment of puerperal infections lessens the mortality nearly twenty per cent. They think that sunlight is the factor, and that it increases hemoglobin, though little or no light reaches the bodies of the patients, and if it did in any great amount it would destroy hemoglobin.

Beyond these few facts we have positively no explanation for the wonderful effect on cold climate types, of the simple act of breathing cold air, and having it play on the face and head. Perhaps the cerebral cells are prevented from overheating and are kept at the optimum temperature. It surely lessens body temperature. One Southern sanitarium has had very good results in nervous cases by the simple expedient of ventilating with cooled air, and the most successful sanitariums are in cool climates. It is evident of course that cold air is injurious to ethnic types adapted to

hot air. It is a treatment for white men, and the blonder the more efficacious.

The use of hot or cold baths is greatly modified by the complexion of the patient. Formerly we reduced fevers by increasing the perspiration, then *Brand* found that in typhoid we could extract the heat sooner by cold baths, but now we are finding that the effect of the cold is very temporary, for it closes superficial arterioles, reduces radiation and perspiration, and creates the necessity for more baths. Hot baths, on the contrary, dilate the arterioles, increase the superficial circulation, radiation and perspiration, and thus lower the fever more than cold baths and keep it down longer. *Chastang*, of Paris (*Caducée*), found the same phenomenon in thermic fever, and if, after a hot bath, the patient is placed in a gentle draught of air, the temperature comes down sooner, consciousness returns sooner and there are more cures than with cold baths. This treatment would be dangerous in negroes if the air temperature is over the blood heat, because there could be no radiation from his skin, though a strong current of air might make up for this by increasing evaporation. At temperatures between 98 and the critical point (73-85) the white skin would not radiate sufficiently without the draught of air to carry off the heat by evaporation. In a cool room the radiation might be sufficient without a draught. *Baruch* says that in fevers the room temperature should never be over 60° F.

Color therapy has occupied a large space in popular literature, but little is known about it. The retinal and nervous irritation of the two ends of the spectrum and the absence of any effect of yellow and green, show that much of the alleged re-

sults of color are merely due to exclusion of excessive amounts of all frequencies. Mild red and blue light may be less irritating than a glary room and appear to be soothing, though in fact more irritating than if the room were merely shaded or were yellow or green. There is an enormous amount of medieval nonsense as to the effects of color in disease, and it is transmitted from generation to generation like folk-lore and old wives' tales. Green rays seem to be therapeutically inert.

H. von Tappeiner discovered that certain fluorescent substances, such as resin, magdala red, erythrosin, fluorescin and acridin, which were more or less inert in the dark, became poisonous in the light. He called this a photodynamic effect but found that in some instances at least it depended on the presence of oxygen. If eosin is injected under the skin, and then exposed to light, it causes extensive necrosis. He tried this therapeutically in skin diseases, by first painting with the fluorescent substance and exposing it to the sun or an arc light. The results⁴⁹ were no better than by the ultra-violet light alone and we have heard little or nothing about the matter since. If iodine is painted on the skin in the dark, it is absorbed and does not discolor, but white light fixes it in the skin.⁵⁰

Tappeiner's work led many to think that we could administer such fluorescent substances as quinin, esculin, fluorescin, resorcin, orcin, eosin, fraxin, uranin, rhodamin, petroleum jelly or salicin, and then cure internal neoplasms by the fluorescent light evoked by X-rays. But fluorescent rays are wholly inert in such small amounts, and unfortunately many of these substances do not fluoresce to X-rays at all. The matter was soon dropped, but in recent years there has been an attempt to revive

the method. Regnault and Foucault concluded fifty years ago that the damage done by ultra-violet light in the eyes was mostly due to the fluorescence evoked in the media of the eye, but there is no evidence that this is so.

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REPORT OF A CASE OF PLACENTA PREVIA IN THE JUNGLE OF THE ISLE OF PINES, WEST INDIES.

BY

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Among many obstetrical cases that came under my care during a three years' practice on the Isle of Pines the one I am about to report was by far the most interesting. Certainly it took more of my limited nerve and called for quicker action than any other experience in my practice.

Any pen picture I may draw will fall far short of the real circumstances which surrounded this case of central placenta previa.

About eleven-thirty one balmy moonlight night a Cuban native rapped at my door with great vehemence shouting "Medico!" which is the term applied to American physicians. I responded quickly and learned with difficulty, because of my limited knowledge of the Spanish language, that an alarming obstetrical case needed immediate medical attention and that I must go at once. I quickly ascertained that I could

not go in my automobile, but must make the trip on horseback through the jungle. I dressed quickly, and hurrying out with my large surgical and obstetrical grip, found a little single-foot pony, which with assistance I promptly mounted. The native took my grip and started afoot in the direction I well knew led deep into the jungle, and with at least five miles to go to reach the nearest native shack. How much farther I would be required to go was not known to me at that time, but now I am fully aware that what seemed then to be twenty-one miles, was really only eleven. The saddle on the pony was so large and broad that I felt as if I was trying to straddle a bare-backed elephant and it was so loosely girdled about the frail animal that I had to do some very good balancing to keep the saddle from turning around. The pony, with true animal instinct, followed his master, who was half running, half walking along the tortuous trail, across small streams, swollen by recent tropical downpours of rain, up and down steep banks and through thick undergrowth of snarly rhododendrons and various species of sumac. The pale light of the fast-setting moon surely aided many times in preventing me from being brushed off my mount by low hanging limbs or thick underbrush.

No conversation took place between the native and myself during the entire, tedious journey. Now and then a long rapid excited volume of low Spanish sentences came back to me from the man I was pursuing, or rather the pony was pursuing, to which I could only reply, "No comprendo, muy pronto," meaning that I did not understand and wished him to hurry along as fast as possible. It seemed to me that I would never get to my destination. It was on, on, on, till I thought I was lost, and felt

that I must surely be under the Southern Cross, or even south of it, it stood out so sharply in the southern sky.

At last we arrived before the native palm-leaf covered habitation, but on dismounting, my legs were so numb as to be nearly useless. However, calling all my forces into action, I hurriedly limped my way into the abode with the customary salaams and courtesies to about thirty individuals of all sizes and ages and of both sexes. I found myself in a large room with a dirt floor;

some crude make on which were lying six small children, all naked as when born. My entrance created more or less alarm and brought forth cries of various tones. Approaching my patient she also showed signs of timidity and shrunk away from my touch of her hand. A candle was now brought near and to my horror I saw her pale, perspiring face and felt a pulse almost imperceptible. I was aware that a hemorrhage of some magnitude was taking place and quick action on my part was re-



The usual home shack occupied by the natives on the Isle of Pines.

and a dim light from two home-made flickering candles spread a gloomy death-like light around the whole room. I could hear the well known groaning of a woman in travail—coming from an adjoining room. I was shown a tub half full of bloody water and a heap of rags well soaked with blood. Hurriedly entering the only other room which was as poorly lighted as the first, I saw my patient in the far corner. In other corners of the room there were cots of

quired. As the entire situation was grasped I knew full well that it was not a case for the well known "masterly inactivity." My knowledge of Spanish was not sufficient to enable me to impart any of my fears or hopes and all I could do was to say "Mucho malo" (very bad), "Mucho sangra" (much blood).

There was no time to make the usual careful, regulation sterilization of my hands. A strong solution of carbolic acid was the

only thing I could quickly prepare and into this I plunged my hands. It turned them nearly white and the characteristic numbness was at once in evidence, but without delay I took my rubber gloves from the sterile towel in which I carried them and quickly drew them on. I then approached my patient with eagerness to ascertain the cause of such a loss of blood. My horror can be imagined as my entering finger encountered the well known soft, spongy feel

ignorance on my part of what the opinion of the rabble was, did not add to my peace of mind. While I was getting control of the situation as fast, and as well as possible, I still did not know what the outcome might soon be. Firmly and tenaciously I held to the pedal extremity, and with each pain, aided and reinforced by my external hand, I made gentle but firm traction. Soon I was rewarded by getting the other foot and the rest of the operation



The common means of transportation by the natives on the Isle of Pines.

of the placenta. Recognizing the importance of instant action I never withdrew my hand, but went right on up through the placenta, which circled around my wrist and did a bimanual version in less time than it takes to write it, bringing down the first foot I could get hold of. The enormous amount of blood, the dim light, the crying children, the screaming patient, the babble of the adults in both rooms, the distance I seemed from civilization, and the

was easily and quickly accomplished. A little rough handling brought forth the welcome "first cry" and an old native woman without comment took the new born baby girl as I severed the cord. Administration of a hypodermic and liberal libations of water, raising foot of bed, and kneading pressure on fundus from outside soon gave hopeful signs of proper contraction of the uterus. At the same time a most welcome lusty cry out in the other room told

me that the little new-comer was doing nicely.

Two hours later all was well, and I was showered with no uncertain evidence of gratefulness from the entire company of strange foreigners. Foreigners I say, for this they were to me, although as a matter of fact I was a foreigner to them, the "Medico Americana." Before allowing me to depart I was well dined and wined, and abundantly supplied with good home-made cigars of high grade tobacco, such as would sell readily here for half a dollar each.

In due time I started home on the best pony and saddle from the paddock near the front and only door of the house, accompanied this time by another rider equally well mounted. Some apprehensions as to the future course of the patient crossed my mind on the journey home, but the beautiful tropical sunrise made me feel refreshed. I had been well paid with the many, many "Mucho gracias," and hand shakes from all the occupants of the shack, both permanent and transient. Very gratifying also is it to say that my bill was paid at once in good U. S. banknotes, with an extra one to be given to the "Senora Medico," which was always the term applied to all "Americana Medico's" wives. I was never called back to see the case but about two months later a large two-wheeled ox cart drawn by a yoke of oxen stopped at my door and there on the floor of the cart on blankets and pillows sat my little patient woman smiling graciously at me as I greeted her, and holding her healthy little babe in her arms.

Out of nearly 500 obstetrical cases at which I have officiated, the recollections of no single one remain more vivid in my memory or are more gratifying than those of this one.

SOME REMARKS ON THE TECHNIQUE OF "TWILIGHT SLEEP."

BY

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When any great advance is made in medicine, it seems strange that the medical profession, or a portion of it, should be up in arms at once to belittle and decry its use. This has been the rule with almost every advance of importance. This question of "Twilight Sleep" is becoming a matter of supreme importance through the demand of the prospective mothers of the country for relief from months of dread and apprehension of labor. The records of thousands of cases of labor, even at this early date, show less percentage of deaths under the use of "Twilight Sleep" than without it. Instead of decrying anything new in any direction, it is much wiser to thoroughly test it, and if something is lacking in its method of use, improvement in technique can be accomplished by earnest intelligent effort.

In November last, I had occasion to use sparteine sulphate in 1-2 to 1 grain doses, in cases of heart weakness from nervous strain and during the final ordeal of childbirth, and my observations satisfied me that this drug was a very valuable means of perfecting the technique of "Twilight Sleep."

Its action on the heart is invaluable in any and all confinement cases. Any irregularity in rhythm or irregularity in the force or contraction is almost immediately corrected. Its action is thorough and persists from twelve to twenty-four hours in doses as small as one-half grain. It is effective in weakness of the right heart and incompetency of its valves; also in functional dis-

ease and mitral lesions. It has no injurious effect upon the cerebro-spinal nerves, but renders "Twilight Sleep" more safe, prevents shock, promotes analgesia, and helps the patient to come out from under the influence of scopolamine and morphine without impaired vitality or exhaustion. Have used this drug as an adjunct to "Twilight Sleep" in a series of cases that showed an especially disturbed mental condition, or had weakened, nervous, or valvular disturbance of the heart, in from 1-2 to 1 grain doses, and from my own observation, as well as that of several colleagues, I am convinced it is of exceptional utility. At any rate I feel certain that in any case that pure drugs are used with good judgment, there is no interference to any appreciable degree with the natural forces of labor, or the slighted defriment offered to either mother or child.

My technique is as follows: In the initial dose, one tablet of morphine hydrobromide 0.01, and one tablet of spartein sulphate 0.03239, and one of scopolamine hydrobromide 0.00045 are all given in a single injection. The morphine tablet has not been repeated in any case. I feel quite certain that repeated doses of this drug tends to produce oligopnea in the infant. Thus far in the cases I have had, or have had a chance to observe, spartein has been used repeated whenever necessary during labor. In half, or three-quarters of an hour after the injection some object in the room is shown to the patient to test her memory. This same object is again shown in twenty to forty minutes, and if the patient recollects it, which is generally the case, a second injection of 0.00015, 1.0003 or 0.00045 scopolamine is used, according to the reaction of the patient. If at this first test the memory is absent the second dose is withheld until further tests show return

of memory. The third and succeeding injections follow according to the tests, using 0.00015 or more of scopolamine as necessary. The essential point in the proper induction of "Twilight Sleep" is its gradual attainment, beginning with small doses and reaching the twilight zone slowly. It requires from one and one-half to two hours for this twilight zone to be reached, and if for any reason one has not the time to develop it thus slowly, it is better not to attempt to achieve amnesia but to seek only a diminution in the amount of pain.

If the patient is very nervous, she usually requires at least one grain of spartein sulphate to make the mind and heart tranquil, and thus aid in producing complete amnesia. It has seemed to me that spartein thus employed in "Twilight Sleep" has a tendency to lessen hemorrhage; certainly in cases in which it has been used no post-partum hemorrhage or excessive bleeding at any time has occurred that could be attributed to its use. The only contraindication of which I am familiar is in cases where a hurried delivery is imperative as in placenta previa, etc. It is my opinion that compensated cardiac cases are greatly benefited by it as the procedure undoubtedly eliminates mental shock and actual physical strain. Complete amnesia is not required in all cases but can be procured in at least 80 per cent. of cases; in 8 or 10 per cent. the drug has shown no effect. In the great majority of cases a reduction in perineal lacerations of nearly 50 per cent. has been definitely shown, where oligopnea has been observed, recovery has been the rule almost without exception.

I have had these chemicals prepared in tablet form for my use by a New York chemical company, using Merck's alkaloids, and in this form find them reliable, convenient and inexpensive.

CAN DEAFNESS BE PREVENTED?

BY

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When one is working among deaf people, either in a medical or sociological way, he is made to realize how often an infirmity of this kind can be prevented. The curse of this affliction resides in its insidious progress and incidentally in the usual neglect of the patient, or his relatives, or his doctor.

If one is not deaf it is very difficult for him to appreciate the great amount of mental suffering which accompanies it. The deaf person considers himself, and is considered by those with whom he is surrounded as more or less of an economic and social loss, and yet I venture to say that if these few remarks are read by the parents of a number of children whose hearing is slightly diminished very few of them will take advantage of the suggestions offered and put their children in proper condition before it is too late.

By far the majority of cases of deafness are progressive in type, and we are wont to call these conditions, for want of a better name, catarrhal deafness. This form of deafness so often arises in early childhood, or at least its profactors arise in early childhood, that I consider it of the utmost importance that the hearing of children be examined as closely as their eyesight. Many a child who is considered stupid in his studies could easily be made the brightest pupil in the class if he were taken in hand in time and his hearing restored to normal. There is nothing more simple than to test a child's hearing with

an ordinary watch each month, keeping note of the distance at which he hears the watch and comparing it month by month or year by year. Of course, the average child under seven years of age appreciates so little what a test like this means that he will often tell you that he hears the watch even when it isn't going. For that reason a specialist who uses this test should use a stop watch. If the hearing, which should be between two and three feet with an ordinary watch is less than that, that child should immediately be taken to an otologist for proper treatment. It is surprising to see how simple it is in many children to Politzerize their ears very gently, whereupon the normal hearing is restored for the time being at least.

Among the many causes in early life which lead towards progressive deafness may be mentioned the following:

1. Acute suppurative conditions of the ears which have subsided.
2. Hypertrophied tonsils and adenoids.
3. Chronic and subacute infections of the nose and nasopharynx.
4. Unusual conditions.

1. Realization that acute suppurative otitis media is a serious condition that demands immediate attention is so well recognized today that very little comment on that score is necessary. However, the majority of persons, and I am sorry to say physicians, too, are perfectly satisfied when the acute symptoms are over and the discharge has ceased; but it is seldom appreciated that these little organs have gone through an acute process which is liable to cause a great deal of anxiety later on. Does one realize that very often adhesions take place in various parts of the middle ear or that the drum itself may undergo degenerative changes? In every instance of this kind if

one has the welfare of the child at heart he will examine that child's hearing as well as he can, and if he notices any tendency towards a diminution in hearing he will immediately attempt to relieve that condition as well as possible.

2. The role that the tonsils and adenoids play in the causation of ear infections is well known today. Tonsils cause trouble not only by their enlargement and interference with the tubal muscles but very often when they are small they cause a chronic infectious condition which is very liable to extend its influence into the eustachian tubes or middle ear. Adenoids aside from causing nasal obstruction will frequently extend into the eustachian tubes sufficiently to close them off. Once the normal pressure within the middle ear is diminished the possibility of deafness is very apparent. The size of the adenoid is not of as much importance as its location, and small fringes of this tissue residing in the tubular orifice, or in the Fossa of Rosenmuller can do a great deal of damage. It is an axiom from which I seldom vary that adenoids should surely be removed at the first intimation of ear trouble, and that under all circumstances they should be removed when they cause nasal obstruction and chronic infection of the nose and throat. As I consider the importance of tonsils in inverse proportion to the age of the child I believe it is a wise policy to remove them in early childhood only when there are definite reasons for doing so.

3. It is surprising to see how frequently parents will allow their children to go on year after year with chronic or subacute infections of the nose. We are beginning to realize more and more that these infections frequently arise in the sinuses, and that the constant discharge of pus or muco-

pus in the nasopharynx will give arise to an inflammation of the mucous membranes in this locality which can extend to the ears. Not only does this inflammation cause a closure of the eustachian tube, but such children are never taught to blow their noses properly, with the result that they are constantly forcing air through a narrowed tube. A relaxation of the drum frequently takes place as a result of this—the condition which I have termed pocket handkerchief deafness.

One must prevent as quickly as possible the continuance of such a condition. This is best accomplished by the proper care of the nose. Severe measures in the treatment of children often cause more harm than good, but simple remedies will often accomplish a great deal. If tonsils and adenoids seem to cause obstruction and prevent drainage of the nose they should be removed. The mucus or muco-pus is tenacious. The nostrils should be cleaned out with a warm solution of boric acid or bicarbonate of soda, the medicine being instilled with a dropper so that no force is used. This can often be followed by instillations of drops of Argyrol, which although not an antiseptic will frequently have a stimulating effect on the mucous membranes and act as a preventive of further infection. Such children should be taught to blow their noses properly—that is by holding one nostril at a time, or by blowing into the handkerchief without holding the nose at all.

Although in many instances no definite evidence is obtainable that there is an actual deafness in childhood, yet the etiological conditions as outlined above are frequently present. Among unusual conditions that tend towards deafness are hereditary influences, infectious diseases, traumatism,

tumors, etc. These need not be mentioned further here.

Can deafness be prevented later on in life? Such a question is frequently asked the otologist, and is to be answered in many ways. I am firmly of the opinion that if the majority of hard of hearing people were taken in hand at the beginning of their trouble, and proper remedial measures were employed, deafness could be prevented. Any cases which show the slightest improvement or a restoration to the normal within a short time are extremely favorable, but such patients should be warned that on any occasion when the hearing has become slightly impaired they should immediately have treatment. Very often patients are satisfied with half way measures which only do good for the time being, and it is my firm conviction that the reason why deafness is so prevalent today is because the average individual is only too well satisfied no matter what opinion is given him about his hearing provided that the impairment of hearing does not interfere with his economic or social life. This is more often the case in patients between the ages of fifteen and twenty-five years of age, because they do not realize the seriousness of a trouble of this kind. Nature frequently gives warnings of one kind and another, which if they are not taken into account will result in a condition which is liable to make a person unhappy during those years of life which ought to be lived to the fullest.

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THE ANNOTATOR

The Physical Defects of Criminals.—

The time has long gone by when it was justifiable to consider criminality as due



to mere viciousness in people who are normal both physically and mentally.

We now know that men take up crime as a profession simply because they are unable to do anything else. It is the worst paid calling in civilization and

every professional, stupid as he is, would willingly do something else if he could. Young criminals are so defective physically that very few of them are able to pass the examination for entrance to the army and navy. Binet's test shows that nearly all are also suffering from arrested mental development, while older criminals are often if not always so profoundly neurasthenic that continuous labor is wholly out of the question. Though spurts of excessive activity are possible they are followed by periods of exhaustion in which the fatigue pains are smothered by alcohol. The young ones can be taught to be good or bad, so that their course in life is very largely a question of the early environment. Some magnificent men have been born and raised in the slums, but Heaven help the weakling with such surroundings. Even after the first crime, at least 85 per cent. can be made into respectable citizens by proper food and training, though none set the world afire. Some are so weak that they are unfit for steady employment even though raised in the best of families. These facts have been published so often, that it is rather amazing they are not put to practical use more often. Evidently most people have never heard of them. There is still need of a campaign of education, and we are glad to see the matter taken up by Doctor Edward Wallace Lee (*N. Y. Med. Jour.*, Dec. 26, 1914). Penology has lost the theory of revenge or retaliation, which has been replaced by the idea of curing these sick men, or if they are so defective as to be

The Removal of Freckles.—Combine equal parts of glycerine and lactic acid as an application to remove moth and freckles from the face.

incurable, taking care of them for life. It is strictly a medical question in which the profession should be keenly interested. Punishments must be retained of course for they have a deterrent effect, but it is unscientific and inhuman to turn out of prison men who are utterly unable to support themselves. Every far-seeing man knows that in time we will have institutions for all sorts of defectives. The twenty-five million dollars of damage done to railroads by tramps would almost pay for taking care of them, and many if not most could be made self-supporting, either in or out of the home. Similarly the money spent to restrain and convict criminals could be largely saved by permanent restraint of incorrigibles. But our real need is some information as to why so many defectives appear. They are almost entirely in respectable families. Many are being traced to disease and malnutrition in infancy and infections of parents during or before intra-uterine life. Some of the causes are remediable, but we are afraid some are not. There is no hope of ending poverty as long as the big birth-rate causes population to keep a little ahead of food production, but perhaps we can do something when we find out all the causes of defective development. We wish a group of cases could be studied intensively. We know that prostitutes are defectives, but the investigators then stopped short and did not find out why. When we know, we can possibly prevent.

Normal Fear.—The war has renewed the interminable discussion as to fear and bravery, and, naturally physicians have the most to say, for it is wholly a psychological topic. The fearless man has probably never been born, because our very existence has always depended upon our ability to escape dangers and we would not try if we did not fear the consequences of carelessness. It is a matter of natural selection. Dangers still surround us on every side. Even crossing a street may be fatal. Every action is the result



of an unconscious summing up of the chances of death or injury. When there are two courses open we invariably take the safest, other factors being equal, but we also take a risk if there is anything to be gained by it. There is not a moment of our lives that we are not in some danger, but the chances of death are usually so small that we learn to ignore them, and are as comfortable and calm as though in absolute safety. War merely increases the risk. In ancient times there was far greater danger in non-resistance, for it meant death or slavery and there was an even chance of surviving if one fought. As times progressed the advantages of successful war diminished but so did the risks. A very small fraction of the soldiers were killed in recent wars, but the proportion is larger in the present conflict. If there are but six chances in ten of coming out alive, most men will gladly take the risk if the rewards are sufficient. The prestige of having done something for one's family, clan, tribe or nation will induce any normal man to run such risks. In ordinary times an advertisement for men to do a piece of hazardous work always brings numerous applicants. The fact that the erection of a tall building destroys a life for every floor, never keeps a soul out of the business. There is no lack of applicants for work in submarines and aeroplanes. Men seem to glory in danger.

It is the unknown however, which creates the greatest fear, and this too is a normal matter of selection. The terror prevents our rushing to destruction. It compels us to investigate slowly and then it fades into the normal fear of ever present danger. The "baptism of fire" destroys the terror of recruits, for they then learn what the risks really are. The veteran ignores them like the structural iron worker—each taking all possible protection. This is why raw levies are so liable to panic. There is then no mystery about the stories of the *sang froid* in the trenches, when any movement may bring death. It would be abnormal to behave otherwise. Men will even face death when they know that a refusal to do it, will render their lives not worth the living. Nevertheless, there is a limit to human endurance of peril, beyond which the nervous system collapses, as from any other trauma. These cases are bothering the armies, and

it is being discovered that troops so exhausted cannot be depended upon to assume new risks. They are not normal, and the normal fear turns to a paralyzing terror. After recuperation, the normal man cannot be restrained from returning to the front. Cowardice is evidence of disease.

Callousness to habitual danger is another matter, as for instance the notorious carelessness of miners in fire-damp. We fail to react to any stimulus repeated too often, and if a danger fails to materialize we forget it. Physicians are notorious offenders and every now and then one of them dies of an infection needlessly contracted from a patient. As an almost invariable rule a physician forgets that he is running a risk. Stranger still is the lay attitude. People will fly from a small-pox case, but do not seem to think there is anything specially brave in the nurse or doctor. The conduct of recruits and veterans is the same.

Infected Ice Cream and Soda Water.—

The National Pure Food Association has begun a campaign against impure and adulterated ice cream and soda water—particularly in the poorer districts of the cities. There is no question that considerable disease is transmitted in this way, and that there is need for greater supervision of the makers and vendors of these



products, but whether the evil is one which cannot be better dealt with by the existing machinery of health departments is debatable. An enlightened public opinion will support all reasonable regulations and approve the expenditure of taxes for their enforcement. Nevertheless, we are afraid that exaggeration of the evil will create a reaction when the public finds it out, so that our last state will be worse than the first. No one wants coal tar colors or any other chemicals in his food or drink and such can be forbidden on the general ground of fraud, without saying they are poisonous in such small quantities. The main point is the use of infected cream or milk, and this cannot be determined without an extensive supervision of the milk supply even back

to the farm. A casual knowledge of the conditions of some of the smaller factories in villages warrants the opinion that they ought to be driven out of business for ineradicable filth. We are not as safe in eating country ice cream as we are in the city where the large concerns are already under supervision. Still it would be a good plan to get after the city small fry more vigorously. The movement is a good one. Let's push it along. Ice cream is becoming a necessity in our tropical summers.

The purpose and effect of dancing would be dismissed as trivial and academic, were it not for the excesses of the present



day mania which have brought the subject within the sphere of practical medicine. The family doctor is likely to be asked advice at any time and ought to know something about it. Savages derive such great pleasure from their dances

that a useful purpose must be conceded. The more refined civilized dances also seem to serve an unknown use or they would not persist in the face of such great opposition and denunciation. It seems that rhythmic movements are expressions of the emotions and excite similar emotions in the observers. Most of the dances of birds are part of the process of mating and are largely confined to the males. There is reason to believe that the curious ceremonies connected with the periodic gatherings of lower animals have a social purpose, binding them together more closely in that union upon which their existence depends. Dances almost invariably precede military expeditions. In times of peace, primitive dances are often stories told in pantomime, and their resemblance in widely separated tribes shows that they have come unchanged from a common source in extreme antiquity. Savages and children are great sticklers for form and do not permit departures from custom. We have historic proof that some childish games date back many centuries, perhaps millenniums. The modern ballet is often a story. Human dances have always been part of the process of mating and are still, but they are

continued long afterwards for some unknown benefit. The religious dances have practically disappeared except among negro revivalists. Among children, dancing is of the same order as the frisking of other young animals, an aid to physical development, and may safely be encouraged. They resort to dance-like games anyhow. After the age of puberty we are getting on thin ice unless the dancing is under strict supervision. There is no question that the white slave traffic is partly based on the familiarity of unguarded dancing. It might be well for our settlement workers to be a bit conservative in arranging dances among those beyond parental restraint. Some of the newly-invented steps are frankly sexual.

The medical side of dancing has generally been confined to the dangers of excess, where the performers may drop dead from acute dilatation of the heart. No doubt also some chronic heart conditions have their origin in the strains of excessive dancing. The rest of the matter is generally considered outside the sphere of medicine, and has been exclusively handled by moralists who have signally failed to check the development of dancing which is now almost a mania like those of the Middle Ages. Perhaps medical scientists can diagnose the case and tell us what is wrong if anything. Surely the psychologists and physiologists ought to say something, for the matter is largely within their respective spheres. Until they speak it would be folly to approve or condemn, except on the general principle that habits dating back to remote times must be beneficial in some way. Children are not the only ones to "blow off steam" by dancing for very joy. We've seen grown-ups do it on the receipt of joyous news. David danced before the Lord. There is no question of the sexual element in many dances, but except in purposely degraded public exhibitions or among savages, it is not suggestive. The pleasure of witnessing dancing is difficult to analyze, but it would be as foolish to consider it wholly sexual as to so class the jumping movements of a happy six months' infant. As in the matter of clothing, we should not read into it, a suggestiveness which is not there. Freudism should not go so far as to make us ashamed of everything we do. Germ cells are not the only ones prompting the innocent normal

movements of happy care-free young people.

The Cleary Acquittal.—It is a pity that medical journals and physicians do not comment more freely upon the medical features of such miscarriages of justice as the acquittal of one who murdered his own son-in-law. The decree of civilization has been pronounced so clearly that there is no mistaking its meaning—people who do murder must be put



where they cannot do it again. As far as the protection of society is concerned, the murderer may be executed or locked up in jail or asylum. With a few noisy exceptions, those who have investigated the matter are quite convinced that the death penalty does have a deterrent effect on deliberate murder, but whether it is enforced or replaced by life imprisonment is not material to this discussion. Where provocation lowers the inhibitions of feeble intellects and places them under the sway of passion, society always makes allowances, for we are all liable to act under passion in a way we regret later. Self defence is now the only acceptable reason for acquittal. Why, then, has this jury so scandalously defied public opinion by releasing Cleary, who acknowledged his guilt and who pleaded for leniency because he had weakened his judgment by alcohol? The jury in the Frank case was obeying public opinion and possibly feared to acquit. The indignation in Rockland County shows that the jury defied public opinion. It is now charged that the prosecuting officer deliberately suppressed evidence to favor a fellow politician, and if this is proved, he will probably go to jail for about as long as Cleary would have been sentenced if the mental condition was as claimed. Still that does not wholly excuse the jury for the facts as presented were sufficient for the judge to condemn the verdict. If they believed the absurd testimony of the alienist for the defence, Cleary should be in Matteawan with other insane criminals. The twelve jurymen have shown bad judgment or worse, and will probably suffer for it to

such an extent as to compel them to leave the community. The matter is as puzzling psychologically as the Frank verdict. At least this lesson may be learned—the alcoholic is a dangerous man, and must be restrained for the good of society as well as his own. Public officials were formerly chosen from heavy drinkers, but it is now time to reverse custom and make excessive indulgence a bar to office of any kind.

Raw vs. Cooked Food.—The dietetic difference between butter and butterine is generally explained away by the remark

that there isn't any because their chemical composition is the same. As for taste and bouquet, to borrow a term from the wine industry, even experts have been completely deceived. Many a man has eaten butterine

for long periods believing it butter. What is the sense then of taxing butterine if it is artificially colored and not taxing butter when it is similarly treated? Both are equally nutritious as far as we know, and it seems a discrimination against the stock raiser in favor of dairymen, as well as a tax on the poor. We may have to modify these views if it is true that butter fat contains some of the recently discovered vitamins of the milk which are destroyed by the heat to which other animal fats have been subjected to make them edible. We have learned that it did make a difference in some feeding experiments with lower animals, whether this food was supplied as butter or other forms of prepared animal fats. Strange, how we are drifting to the idea of raw foods. We have of course gone a long way in the other direction to avoid infections, but we may safely come back a little now that food inspectors are making it less necessary to sterilize everything. He who has lived long out of tin cans, knows the terrific thirst for something fresh and raw. The man who wants his beefsteak dripping red may be satisfying a vitamin need. The connoisseur who said the proper way to cook a wild duck was to carry it slowly through a hot kitchen, knew that cook-

ing destroyed something good. Raw oysters and clams have a satisfying quality they lose when cooked, and not a few say the same of eggs. We know we ought to have raw milk and not cooked. Of course no one is likely to drift to the extreme of tearing raw beef from bloody bones with his teeth and nails as our vegetarians fear, but we might at least call a halt on cooking the "life" out of our foods—an expression which is beginning to have some sense in it. In our metabolic needs we have not drifted so far from the monkey stage as we have hitherto taken for granted. This seems a long way from oleomargarine, but the moral of the whole story is this new proof of the utmost need of extending our food inspection service, so that we can be sure of what we buy, and also sure that it is so clean that cooking is not necessary for sterilization, and also sure that we can eat things raw without the ever present fear that we will soon need the doctor. Our digestive organs have lost the power to digest cellulose and to a large extent raw starch, but they are still able to take care of the raw foods of animal origin, and moreover if we do not take some things raw, the "doctor will surely get us."

Partial Collapse of the Geneva Convention.—The original Geneva Convention



proved so impractical that its provisions were ignored by belligerent armies. The second convention attempted to remedy the defects but it seems that in some respects the new rules are as impractical as the first. As we have previously stated, the original mistake was to consider the medical staff as non-combatants or people doing nothing to increase the efficiency of the army. This was before the days of sanitation, when doctors were present merely to treat the sick and wounded of either side—a pure matter of humanity. After it was shown that armies could not exist in crowded countries without the aid of sanitarians, the role of the doctor was changed but not his non-combatant status. The new Geneva Convention provided that he should be sent

back to his own lines if captured, though the side that did this was only increasing its enemy's efficiency. The General could delay the departure until convenient, but we now hear that doctors are detained a long time if not indefinitely. No matter what the reason, the delay is a serious blow to the enemy, and is certainly justified as helping to bring the war to an end sooner. It is high time that the medical staff should be taken out of the degrading status of non-combatants and considered in the more patriotic light of combatants. They do nothing to kill the enemy, but neither do the military grocers and lawyers both of whom are combatants. Military law considers anyone a combatant if he helps in any way to increase an army's efficiency—even hired civilians with it are entitled to all the privileges of prisoners of war if they are captured. But this great honor of being considered one of the nation's defenders is still denied the doctor, much to his humiliation. The Geneva Convention must be changed or abandoned. It is a dead letter anyhow, because modern soldiers who do not know of its provisions obey them instinctively as a matter of humanity. Only savages kill the disabled wounded. One belligerent is so sure of the humane care its wounded are to receive from the enemy, and has such a high opinion of the value of its own doctors, that an order has been issued for them to retreat with the army, abandoning the sick and wounded to the enemy.

Cinnamon Oil for Warts.—Pretty nearly every boy is annoyed by warts, and as the affliction is considered an inevitable result of being a boy, the doctor is rarely consulted. The sufferer is at the age when all sorts of curative charms appeal to him, and he goes through the usual gamut of them. As in the self-limited infections, all get well in time and transmit the folk lore to the next generation. So we get few chances to advise, and even then we are inclined to use some form of cautery which



is painful and leaves an ulcer for slow healing with a subsequent scar. It is a great satisfaction, then, to know what an efficient remedy we have in cinnamon oil; as suggested by Rosenberg (*Ellingwood's Therapeutics*). Recent trials have shown that if a small drop is applied daily to the head of the wart it causes no burning or pain and the growth disappears, leaving no scar. Now this may seem too small a matter to warrant more than a few words, but the mental suffering of a sensitive boy with warty hands is not to be ignored, and it is well to know of a home remedy cheaper than radium and fulguration. When a boy loses faith in the left hind foot of a rabbit, killed in the graveyard at midnight, in the dark of the moon by a black negro, he has passed into the cold world of facts. We ought to prevent him from putting the charm to such an unfair test. If we cure him without it, he will retain that delicious faith in a rabbit's foot which is one of the few mystic pleasures of life left to us by a cruelly logical world. Incidentally we might say that cinnamon oil does not seem to act as an escharotic as Rosenberg thinks, but purely as a disinfectant and warts may be due to a germ after all. We might be equally successful with other mild germicides. Radium and concentrated radiations may owe their efficacy in these growths to their germicidal effect. Escharotics are not necessary. We must reserve the rabbit's foot for purposes in which failure cannot shake our childhood faith. We've lost Santa Claus, and have been weepy about it ever since, so let's grip our rabbit's foot for the peace of mind it gives to everyone except the scientific and unromantic and unimaginative and un———, but we stop here as someone might think we're superstitious. Every great man secretly harbors some harmless pet mysticism and if he derives comfort from it why worry? We all like to hold on to some primitive delusion which our remote ancestors believed and we derive the same comfort from it as a weaned baby from its thumb. We do not own a rabbit's foot, but have no sneers for those who do. There's a delightful and fascinating story for our sober minded psychologists, if they will only dig it out of the charms for warts.



CORRESPONDENCE

THE NEED FOR MORE STRINGENT RESTRICTIONS FOR LICENSING FOREIGN PHYSICIANS.

Roros, Norway.

To the Editor

AMERICAN MEDICINE,
New York City.

How the protection of the medical profession of the United States from outside or foreign competition compares with that provided in Europe is a question which at the present time should be of more than passing interest in view of the increased immigration to the United States which the present European war is certain to precipitate, as it is easy to foresee that European physicians in greater numbers than ever will be tempted to leave their warsacked and impoverished home countries for the supposedly richer pastures of our American shores. And this question has been the more forcibly brought before the writer by his recent experience in obtaining a license to practice medicine in Norway, his native land. My experience in this connection being particularly elucidating as to the means and methods employed here to keep foreign competition away, I believe that a brief account thereof will not fail to be of interest to the readers of your wide-awake journal, ever a champion for the interests and welfare of the profession. The utter inequality between the requirements of our state board examinations for the admission of European physicians and the European requirements for the admission of American physicians will be so apparent as to need no further comments.

After living in the United States since 1891, being admitted to full citizenship in 1900 and graduating from Bellevue Hospital Medical College in 1897 (with honors) certain family affairs made it incumbent upon me to return to Norway, my native land, in August, 1912.

Immediately upon my arrival I put in an application for license to practice medicine and received the reply that, in case my application be favorably considered, which depended upon the result of an investigation of my diploma and other credentials, a license would be granted upon the condition that I complete two years of "service" at the State Hospital in Christiania and pass a satisfactory examination in a number of subjects, to be determined later. The

investigation alluded to was undertaken by the State Department of Foreign Affairs and caused me the loss of exactly half a year's valuable time, so that not until January, 1913, was I allowed to begin my two years of hospital service. Now it should be noted, that with my application, I had brought forth evidence of my having served as interne at St. Luke's Hospital, New Bedford, Mass., for one year, of other hospital appointments and appointments on the medical faculty of Denver University, as instructor in gynecology, and of private practice in New York City and Denver, Colo., extending over a period of 14 years.

The two years of hospital service have included the following divisions: medical, six months; surgical, six months; skin diseases, three months; eye diseases, three months; ear, nose, and throat diseases, three months; contagious diseases, three months; children's diseases, three months; obstetrics and gynecology, three months. Some of these services were performed simultaneously in two or even three different divisions. So, for instance, were pediatrics, obstetrics, and gynecology done in the same three months. Besides, I was requested to attend the instruction in nervous diseases, physiological chemistry, pathological anatomy and operative surgery on the cadaver, each three months and all obligatory. As though this was not sufficient, it was especially requested that I follow during these two years the lectures in hygiene, pharmacology and in all other subjects as far as time would permit. Examinations were held almost daily from the 25th of November till the 17th of December and comprised the following subjects: 1. Clinical medicine. 2. Clinical surgery. 3. Pharmacology. 4. Theoretical surgery. 5. Pediatrics. 6. Internal medicine. 7. Obstetrics. 8. Gynecology. 9. Eye diseases. 10. Hygiene. 11. Skin diseases. 12. Pathological anatomy and microscopy.

A word as to how these various examinations are being conducted. In the first place, they are all open to the students of all grades, the examination room being particularly crowded with the junior student anxious to listen and learn. The time for each examinee is from three-quarters of an hour to two hours for each subject, the shorter time being allotted to the specialties such as skin and eye diseases, pediatrics, obstetrics and gynecology and pharmacology; one hour each to internal medicine, theoretical surgery and pathology, and two hours for each of the clinical examinations in

medicine and surgery. A specialist in each subject, appointed by the Government, is present at the examination as a witness (censor). The clinical examinations are conducted at the bedside, the patient in bed being brought before the examinee who has one hour (exactly by the clock) in which to examine the patient, obtain the history and perform the laboratory tests and another hour in which to present the case to the professor, giving a detailed account of anamnesis, *status presens*, physical diagnosis, urinalysis, diagnosis, prognosis and treatment. By the professor's questioning and discussion of the case the examination is invariably kept up to the very time limit of two hours. Then the professor and the censor retire and after ten to fifteen minutes of waiting the result of the examination is announced by the professor to the examinee and the waiting crowd. The grading is given in figures, five being the lowest to pass, while 10 is the highest mark. The examination in eye diseases is a combined theoretical and practical test, about half an hour being given to the former and fifteen minutes to the examination of a patient, diagnosis, prognosis and treatment. The examination in skin and venereal diseases is also a combined theoretical and practical test. The examination in pathological anatomy and microscopy is divided into three parts: 1. Theoretical. 2. Microscopy. 3. Practical test, a heart, liver, kidney, lung, spleen or brain, or what not, being given the examinee for description and diagnosis. It gives me pleasure to state that I stood all these tests with credit to American medicine and my Alma Mater. Measures even half as stringent as these would, I believe, prove sufficient in keeping European competition away from American medical practice and offer an adequate protection to our already over crowded profession, struggling fiercely for a living in competing with free treatment at hospitals, dispensaries and out-door clinics of all kinds, to say nothing of the many legalized—*pathies* and—*isms*, Christian Science and other forms of more or less masked quackery. Of all proletariats I believe there is none so degrading or dangerous in its effects and consequences as a medical proletariat, and unless protective measures be speedily instituted, there is now more than ever reasons for seeing a grave peril threatening the very independence and respectability of the American medical profession through an invasion of European physicians upon a large and hitherto unprecedented scale. In practical ability the average physician of the United States is decidedly superior to his European brother who still to a large extent is under the sway of the therapeutic nihilism of the Vienna school. Hypodermic tablets are here almost unknown, and morphin in the form of the time-honored Magendie's solution is about the only hypodermic injection in use. Our refined methods of administering medicines in capsules and tablets are here only seldom employed outside of the hospitals, tablespoonfuls of nauseating mixtures and solutions being yet the common way of medication. It would be only just and fair that the American medical profession demand of all foreign physicians seeking prac-

tice in the United States that they, without regard to number of years of practice or any other distinction they may have attained in their home countries, pass a finishing year in an accredited American medical college, followed by graduation together with the students of the college a subsequent "state board" examination in due order. This, though considerably easier than the requirements here imposed upon me, I believe shall effectually serve the purpose of staying the tide of an European invasion, likely to be serious in its proportions and dangerous in its consequences.

A. E. ENGZELIUS, M. D.

REMARKS ON THE USE OF EMETINE.

Burlington, Iowa.

To the Editor

AMERICAN MEDICINE,
New York City.

Apropos of your review of the properties of emetine in AMERICAN MEDICINE for September. I wish to say that my father, Dr. John A. Young, a well known physician in Western Illinois, who died in 1874, told me some years before his death that he had accidentally discovered a new use for ipecacuanha (emetine was not then isolated). In a labor case which had been easy, his patient, just as he was about to leave her, suddenly took on all the appearances of post-partem hemorrhage—blanching, sighing respiration and collapse; but the bleeding was not in evidence. Fearing a concealed hemorrhage, although at a loss to say where it might be, he administered an emetic dose of ipecac pulv. which was promptly followed by subsidence of all the alarming symptoms, and the patient making an uninterrupted recovery, he decided that the supposed hemorrhage was really shock. Subsequently to this he administered ipecac in a case of surgical shock and so satisfactory was the result that he ever afterwards made it his premier remedy for shock. Only recently one of his colleagues, now superannuated, told me of like success with it and expressed surprise that it had apparently never gotten into medical literature.

H. B. YOUNG.

A GERIATRIC SOCIETY.

To the Editor

AMERICAN MEDICINE,
New York City.


I wish to come in touch with physicians interested in the care and treatment of the aged, and in research work dealing with senescence, for the purpose of forming a Geriatric Society.

I will gratefully appreciate it if you will publish this letter and will be grateful to the journals that will copy it.

Very respectfully,

I. L. NASCHER, M. D.,
103 W. 88th St., New York.

ETIOLOGY AND DIAGNOSIS



A Diagnostic Sign in Chorea.—Heiman discusses chorea (*Archives of Diagnosis*, April 1914), and refers to the following diagnostic procedure—

"In order to produce the diagnostic and prognostic sign in chorea of children, the palm of the patient's left hand is placed upon the palmar surface of the observer's hand. The thumb of the patient is embraced by the index and middle fingers of the physician, and the other four fingers firmly grasped by the remaining fingers of the examiner. The right hand is similarly grasped by the left hand of the physician. The attention of the patient is then invited by asking him a simple question, for instance, his name, age, address, etc., at the same time having him look directly into the eyes of the examiner. If the patient has chorea, the twitchings of the hands will be distinctly augmented each time his attention is engaged by the mental concentration required to answer a question. The more the observer is able to disengage the patient's attention from the examination, the more surely will he be able to discern the finer muscular twitchings indicative of the early stage of chorea.

In patients who are steadily improving the twitchings of the muscles of the hand become gradually less and less marked, so that eventually not the slightest movements can be detected.

In order that this may serve to differentiate chorea from analogous conditions, that at all times it is an index to the severity of the disease and that its disappearance signifies in nearly every case a corresponding cessation of the other manifestations of chorea, it seems of considerable importance that this be demonstrated in the earliest stage of chorea."

TREATMENT

Earache.—In the *Boston Medical and Surgical Journal* for February 26, 1914, Sobotky says the treatment is usually paracentesis. If there is no free drainage after the paracentesis has been done, the middle ear should be gently inflated, per Eustachian tube, and the secretion thus forced through the incision in long, tenacious, mucous strings. As a proper paracentesis is the essential treatment, the technique will be described.

It is usually not necessary to employ a general anesthetic; a local application of equal parts of menthol, cocaine, and carbolic acid mixture will give a high degree of insensibility to pain if applied to the tympanum, for five minutes; in the form of a soaked cotton tampon.

A free incision is best obtained by the use of a sharp paracentesis knife, shaped like a scalpel or curved bistoury. The arrowhead-shaped paracentesis knife is unsuitable.

Previous to the operation the canal should be mopped out with cotton moistened with alcohol. The instruments should be sterilized with alcohol, or by boiling, and the hands should be carefully sterilized.

After sterilizing the knife, the ear speculum, and the hands, the index-finger of the left hand should be placed in the convolution of the auricle, just above the external meatus, and traction exerted in an oblique direction, upward and backward in adults, and downward and slightly backward in young children. This straightens the canal. With the patient's head firmly held, the knife should be introduced along the posterior part of the floor of the canal, with the cutting edge directed upward. With an absolutely clear view of the tympanum the clear incision should be made in the posterior quadrant by puncturing the tympanum almost at the lower border of its attachment and incising from below upward.

Care must be taken not to insert the knife so deeply as to wound the promontory mucous membrane. After wiping out the discharge and the blood a cotton wick should be placed in the canal and instructions should be given to syringe the ear every two hours with a pint of hot boiled water, the ear syringe to be boiled at each syringing.

The patient should be seen every day until the discharge has ceased and every effort should be made to encourage free drainage, as the acute symptoms may return should there be any obstruction to the flow of pus. Should these symptoms recur it is well to repeat the paracentesis.

The great danger of mastoiditis developing from an acute otitis media should compel the physician to examine very carefully the mastoid region at each visit. The neglect of the early mastoid symptoms may result in intracranial infection or in the necrosis of the anterior wall of the mastoid antrum and of the tip of the mastoid process, the abscess here showing itself as a large postauricular swelling with sometimes a burrowing of pus along the neck muscles.

As it is very necessary to differentiate between mastoiditis and an inflammation of the auditory canal, the symptoms of both are given: The mastoiditis symptoms are chiefly those of pressure from the secretion in the mastoid cells—pain, swelling, some redness and marked tenderness on finger pressure over the mastoid process, together with a high temperature and constitutional symptoms. These are the distinguishing features of mastoid involvement. (In some cases this statement does not hold. The temperature never is high, pain is slight, and constitutional signs not marked.—Ed.) On examination with the ear speculum, a bulg-

ing may be seen in the posterior and superior wall of the canal, although this is by no means always present. Inflammation of the canal, with or without furuncle, causes great pain in the region of the ear, aggravated by moving the auricle up and down and by chewing. The diffuse inflammation may simulate the redness and bulging of the posterior superior wall of the canal in mastoiditis, but differs materially in situation; the mastoid symptoms being posterior and in the bony part of the canal, while the canal inflammation produces swelling in the inferior wall of the anterior cartilaginous portion of the canal. The temperature is much lower than in mastoiditis and constitutional symptoms are lacking or very slight.

In all otitis media cases the throat and nasopharynx should be examined for enlarged tonsils and adenoids. The relationship of adenoids to frequent attacks of otitis media has been conclusively proven, hence it is the duty of the physician to completely remove the adenoids and enlarged tonsils after the acute symptoms have subsided. When removing the adenoids it must be the aim of the operator to remove all of the adenoid tissue, as a large central adenoid may not cause anywhere near the trouble that bits of adenoid tissue can produce in the fossa of Rosenmüller and around the Eustachian orifice.

Furuncle of the canal is a frequent cause of earache, but the pain is not as deep seated as in otitis media, although it is usually more exquisite. Furuncle can readily be diagnosed as it is easy to see, and moving of the auricle causes severe pain. The characteristic red swelling, about the size of a pea, extremely tender to probe touch and situated at or near the external meatus, is in decided contrast to the findings in an otitis media.

The treatment of furuncle of the auditory canal consists of a free incision, under local anesthesia, the application of dry heat, and tampons of 10-per-cent. ichthyol and glycerin, or 3-per-cent. carbolic and glycerin, or 5-per-cent. aluminum acetate solutions, renewed every three hours.

Impacted cerumen may cause pain in the ear, but it is not severe. The presence of cerumen is easily determined and the treatment self-evident.

If the ear has been carefully examined and no cause discovered for the pain, the teeth should receive the examiner's attention. Pain due to bad teeth is often referred to the ear, and the prompt dental treatment of such a case will eliminate the earache.

In the absence of any of the above-named conditions, the patient should be referred to a neurologist for an opinion as to the likelihood of neuralgia.

If the underlying cause is a tuberculous laryngitis or empyema of the maxillary antrum, the symptom-complex will be sufficient to determine the diagnosis.

It often happens that patients complain of repeated attacks of earache either with or without suppuration. This is due, in the vast majority of cases, either to the nasopharyngeal secretions being forced into the middle ear

through the Eustachian tube, or by the blocking of the drainage by adenoid tissue at the Eustachian orifice. Hence every patient with such a history must be forbidden the use of nasal irrigations and must be warned against blowing the nose violently and thus forcing secretions into the middle ear.

If any adenoid tissue is present it is, of course, essential to remove it, as stated above.

This paper is intended as a plea to the practitioner to treat earache with the respect it certainly deserves, and as an aid to him for the recognition of the conditions causing the symptom.

Therefore these points are to be emphasized:

1. The cause of the earache must be determined.
2. Treatment must be prompt.
3. The patient must be closely watched for complications (mastoiditis).
4. If complications develop, despite careful treatment, the patient must be immediately referred to an otologist.
5. In repeated attacks of earache, nasal irrigations and violent blowing of the nose must be prohibited.
6. Enlarged tonsils and all adenoid tissue must be removed.

The Treatment of Bed Sores.—The price of freedom from bedsores says Lind (*New York Med. Jour.* Jan. 2, 1915) is unremitting attention to bedridden patients. Each one of these should be examined at least as often as once in two hours. The position should then be changed if the case is one which permits of this, and the sheets and bedding smoothed out. Bedsores are particularly prone to develop in paralytics and in patients in the last stages of chronic diseases. A well nourished condition of the bodily tissue helps to prevent them and therefore the patient should be overfed. If he is on solid food, but not taking a sufficient quantity of nourishment, two raw eggs beaten up in a pint of milk are given once or twice a day. If he is taking liquid food, broth and milk are given at each meal time and two eggs beaten up in a pint of milk between meals.

When practicable, dependent parts in bedridden patients should be kept on a pneumatic ring. In fracture of spine and similar cases, a pneumatic or water bed, not over filled, should be used. Patients kept in an ordinary bed should have the sheets stretched tight and pinned to the mattress. Care should be taken that no crumbs or other foreign substances are allowed to remain in the bedding. Male patients who are incontinent should wear a rubber urinal constantly.

As soon as patient has soiled himself, he should be washed with warm water and castile soap. Then zinc oxide ointment (U. S. P.) is rubbed into the skin with the finger tips. The patient is given an all over rub with fifty per cent. alcohol, to which alum has been added in the proportion of ten grains to the pint, at least once a day and after every soiling if there is any redness of the skin. Fol-

lowing this, the zinc oxide ointment is rubbed in.

When the skin is broken, bathe it with warm water and castile soap, follow with warm saturated solution of boric acid and pat dry with gauze. Then apply the following dusting powder:

Aristol 1 part;
Boric acid 1 part;
Lycopodium 8 parts;

Do this every two hours and relieve pressure at once with pneumatic ring.

When the sore has extended below the skin, the same treatment is used with the addition of irrigation with hydrogen peroxide before the boric acid solution. A few layers of sterile gauze are used for dressing; too much will increase pressure. They are fastened with a light muslin gauze bandage.

Old bedsores will little or no tendency to heal should be stimulated. Ice cold compresses for a few minutes followed by hot ones will sometimes accomplish this. Or they can be cauterized once or twice with lunar caustic or pure carbolic acid. The following ointment is stimulating:

Silver nitrate 1 part;
Balsam of Peru 10 parts;
Zinc oxide ointment 100 parts.

Resistant and multiple bedsores, especially in very emaciated patients, should be kept in a continuous bath at 98 to 99° F. This will keep the patient comfortable and afford the most favorable condition for healing.

The Treatment of Acute Prostatitis.—In his exceptionally practical and valuable paper on the treatment of this distressing affection Robinson (*Amer. Jour. of Clin. Medicine*, Dec., 1914) advises first of all to put the patient to bed. As a rule we find him there, but if we do not we should make him go there. Local treatment of the urethra should be stopped, although this is not so imperative as it is in epididymitis. However, the internal treatment, on the contrary, should be continued. Unless the patient is so sick that his stomach cannot stand anything, the santal-oil preparations should be continued. They diminish the dysuria, render the urine bland, and have, apparently, a beneficial effect upon the prostatitis itself.

Magnesium sulphate, in 1-dram to 2-dram doses four times a day, should be given regularly. This prevents constipation, and has a beneficial effect on the fever and the toxemia. If the fever runs above 101 or 102 degrees and there is severe headache, I invariably give some of the synthetic antipyretics, such as aspirin, phenacetin, antipyrin or pyramidon. These not only have a symptomatic effect in reducing the fever, relieving the headache and making the patient feel altogether more comfortable, but they also diminish the pain in the prostate gland and materially shorten the course of the disease.

In severe cases of prostatitis, we can but ill get along without any antipyretics. If the pain

in the prostate gland is so severe that the patient is unable to sleep, restlessly tossing about day and night, we are forced occasionally to give a hypodermic of morphine; although I prefer to give the morphine in the form of suppositories of the following composition

Morphinae sulphatis gr. 1-3
Extracti belladonae gr. 1-3
Olei theobromae grs. 20

Less than 1-3 of a grain of morphine has no effect in a real case of acute prostatitis demanding an anodyne.

Leeches to the perineum are favored by many physicians, and they frequently afford immediate relief. I believe, however, that we can get along without them. Ice to the perineum is comforting and not injurious. When it comes to rectal douches, however, I prefer hot water to cold. The resolution seems to be brought about more rapidly by the use of heat than by the use of cold. It is true that when prostatitis is to terminate in an abscess the hot-water enemas or applications by means of the psychrophore often will hasten this; but this is no misfortune, for, if an abscess is to take place and to break, the sooner this occurs the better.

The hot water to the prostate gland may be applied as an ordinary enema, about 6 ounces, containing 10 drops of laudanum and 10 grains of antipyrin, being injected and retained for about ten minutes; or it may be applied by means of the rectal psychrophore, hot water being circulated for about ten minutes.

Suppositories of mercurial ointment and ichthyol have often been recommended and used, and I have made use of them many times myself; still they irritate the rectum badly, sometimes very badly, and the benefit derived from their use seems to be too small to outweigh the damage. I have, therefore, given them up altogether, and the only suppository that I use in acute prostatitis is the following:

Iodoformi grs. ij
Antipyrini grs. v
Morphinae sulphatis gr. 1-4

Label: Insert one three times a day.

The morphine, of course, has a tendency to constipate, but this is overcome by the magnesium sulphate which is administered through the course of the disease.

Some of our German colleagues advise starting with massage as soon as the hyperacute symptoms have subsided. I am opposed to it in any stage of acute prostatitis, as it may produce an exacerbation of the trouble or may set up an epididymitis. Massage of the prostate gland is distinctly a measure reserved for chronic conditions of the gland. Of course, if there are boggy, fluctuating places in the prostate gland which on gentle pressure yield a discharge of pus into the urethra, such expression may be performed; but this is really a different procedure from what we ordinarily understand by massage. If by gently pressing the prostate gland we are able to express pus into the urethral canal, we should do it twice or three times a day, following this procedure by a very gentle irrigation with a 1:4000 potassium-permanganate or a 1:1000 silver-nitrate solution.

GENERAL TOPICS

Science the Iconoclast.—The world goes round and we progress, says the *Med. Press and Circular* (Dec. 16, 1914). This is an age of progress—we are always told so and we must believe it, or our life would be made unbearable. We can seek refuge ourselves and satisfaction for such consciences as remain to us in the fact, that progress in its ubiquitous sense has never been defined. It probably means going away from a point in order that we may triumphantly return to it at a later date. Anyway, we have a change. We shatter brazen idols and uncover their clayey feet, and then try and amalgamate the brass and silica into a less enduring image of a handsomer shape. The taboos of to-day are the decalogue of the day after to-morrow. We used to avoid colds by wonderful respirators and the superimposition of many wraps. Now we indulge in such fresh air as the inspector of nuisances allows us, and wear the minimum of clothes permitted by the police. This, too, to avoid rheums and fluxes. Calomel used to stir up the liver to further efforts and promote the flow of bile. To-day's physiologists tell us that, whatever it is, it is not a cholagogue. We shudder and nauseate ourselves by reading about the mixtures of offal and excreta contained in early prescriptions, and we inject very similar substances into our defenseless patients to-day as the very latest treatment. The fashion changes even for water. We have heard many a time and oft that water with meals was anathema—it diluted the digestive juices and was a general hindrance. This seed fell upon good ground, till now many men claim that the internal use of the fluid should be prohibited unless on medical prescription. Now we hear that it is harmless or actually beneficial. Instead of an inert diluent, water is a gastric stimulant, and may be drunk almost with impunity. The ways of science are very wonderful. Discovery succeeds discovery, and we go round and round till we are dizzy for the sake of progress. When will it stop?

The Dinner.—The important function of the dinner, where all of the family should congregate, as well as friends present, should be looked forward to with pleasant anticipation, says an editorial writer in *American Practitioner* (Dec., 1914) for, as is often the case, this is the only meal at which all can meet. The dinner should not be a formal affair, given over to the ingesting of food in a perfunctory and set plan, be partaken of in schedule time, but a rendezvous where comradeship should prevail, and when every and anything which can contribute to the

zeal and pleasure of the occasion should be indulged. It is here we should be at our best; best in spirits, in humor, with clean bodies and clean minds. Every member of the family should be allowed, encouraged to partake of the cheer, join in the conversation, which should always be general, relate and discuss happenings personal or otherwise of the day, ask and receive advice without restrictions or annoyance. There should be jollity, laughter in abundance, not to the embarrassment of any individual present, but pertaining to happenings, anecdotes, clean humor, much amusement. A member of the family should never be displeased or harshly spoken to at the dinner table, for the mental effect will be bad, besides, it will surely disturb the function of digestion. Preparation should be carefully made for the important function of the dinner *en famille*, everything, in fact, done which will add to the pleasure of all, and each individual member of the family from the grandsire to the infant should be present always at his or her best. We believe that the baby, if there be such, should be in attendance at the dinner regularly just as soon as he can sit in a high chair; should be a part of the company and enter into the festivities for the educational, moral and other advantages to be gained; the character of attention given him will count for much in fashioning his life. It is this picture of home life, particularly the family gatherings in the dining room, which will remain most enduring until the end, and it is this picture which will be fashioned and become part of our lives, to remain with us under all conditions, whether to the hovel or the palace, the prison or the church, whether in joy or sorrow, whether tossed upon stormy billows or in peace and prosperity; when the hair becomes white, the form bent, it will still be our picture and, good or bad, we will remain a part of it.

Blessed be the memories of home and thrice blessed the companion and comradeship of the daily gatherings at the table in our father's house.

Some Remarks on Medical Consultations.—Davis in an exceedingly interesting and practical paper (*Wisconsin Med. Recorder*, Nov., 1914), discusses the various problems connected with medical consultation and emphasizes several of the most important points.

"Thus in entering the room occupied by the patient the attending physician should enter first, and after the examination counsel should retire first. The rule is that the attending physician is the first to enter and the last to leave the sick room. Counsel should not ask questions of the patient or friends on the history of the case while making the examination, as the information should have been obtained from the attending physician before entering the sick room. After counsel has completed his examination he should announce that he is through and be ready to retire. The subsequent conversation between the physicians should be in private.

"After the consultation is concluded, the attending physician should acquaint the family with the result, unless there should be reason that would cause him to request counsel to impart this information. The consultation is now closed so far as the relationship of the counsel is to the case concerned. He is not at liberty to again enter the sick room, or to express himself in a confidential manner to any member of the family or to other persons at any time, on any phase of the case, unless invited to do so by the attending physician, and then only in his immediate presence.

"No physician called in counsel has any right to do or say anything at any time that could in any manner detract from the prestige of the attending physician, or that will lower the latter in the estimation of his patients or friends.

"No physician can be considered an honorable man who will use any information gained in consultation to injure the physician who was in charge of the case.

"Counsel has no moral right, when called to meet at a certain hour, to rush in an hour late and put up the bluff that he has been so busy attending a very serious case and could not get away, and then proceed to orate for the benefit of patient and friends on the magnitude of his practice and the number of leading citizens who were waiting in his reception rooms when he rushed away. The interested parties to this case—the patient, his friends, and the attending physician—are not greatly interested in the extent of his practice, or the number of surgical operations he has performed in the past month. Even the make of his automobile or the number of horses he has driven to death will not be of great importance to the patient.

"It is not just an act of 'brotherly love' for counsel to remark to the friends of the patient that 'he ought to be in the hospital where we could operate at once if his condition became grave.' Especially is this true if counsel happens to control a hospital."

Mistakes and Sins.—"We make mistakes; other people commit sins." A wrong diagnosis after due examination (a thing that happens to all of us) is a mistake, and a pardonable one; a wrong diagnosis arrived at without due examination (a thing that happens to the other fellow) is a sin; medically speaking, it is "the unpardonable sin." That an examination was not allowed is no excuse for a wrong diagnosis. If you cannot convince the patient that an examination is necessary, quit the case; for it is better to lose a patient than to lose reputation. Moreover, do not treat first and examine afterward; for then you may be called on to treat, not only the disease, but also the effects of your own treatment. After an examination has been made, if still in doubt, admit it. If you do not know enough about the case to satisfy yourself, it is not safe to assume that you know enough about it to satisfy the patient; this is not only indifferent ethics, but also bad policy.—Arthur E. Giles, *Clinical Journal*.

Consolidation of Journals.—The *American Practitioner*, New York, has been purchased by The Urologic Publishing Association and consolidated with *The American Journal of Urology, Venereal and Sexual Diseases*. The consolidated journal will be under the editorship of Dr. William J. Robinson. The publication offices will be at 12 Mt. Morris Park West, New York City.

The Modern Hospital Purchases the International Hospital Record.—The *International Hospital Record* which has been published for eighteen years by the Sutton Publishing Company, Detroit, has been purchased by The Modern Hospital Publishing Company of St. Louis and Chicago, and will be merged with *The Modern Hospital* beginning with the March issue.

The Modern Hospital is a monthly magazine devoted to the building, equipment, and management of hospitals, sanatoriums and kindred institutions. Recently it has opened several new departments relating to public health problems, such as "Philanthropy and the Public Health," "Prevention of Tuberculosis," "Prevention of Blindness," "Dispensary and Out-Patient Work," and "Life Extension." The editorial offices of *The Modern Hospital* are located in Chicago and the publication offices in St. Louis.

Special Internal Secretion Number.—The editors of the *Woman's Medical Journal* wish to call especial attention to the March issue which will be an "Internal Secretion" number and will contain much of interest on this most interesting subject.

The contributors are particularly well known and able members of the medical profession. Dr. Eugene Hertoghe of Antwerp, Belgium, is perhaps the foremost authority in Europe on his specialty, "Hyperthyroidism," and he contributes a most helpful and scientific article based on researches he has made in his study of the thyroid gland; Dr. Henry R. Harrower of New York, is an authority on "Hormone Therapy," having recently written a very important book having for its title "Practical Hormone Therapy." Dr. Harrower will consider mammary therapeutics in an article entitled "The Mamma as an Internal Secretary Organ."

Readers of the *Journal* need no introduction to the other contributors of this special number. Dr. Mary Sutton Macy, and Dr. William Seaman Bainbridge, both of New York, have frequently given us helpful and sound advice in their former contributions. In this number Dr. Macy will write on "Rest as a Therapeutic Measure in Systemic Goitre," while Dr. Bainbridge will give some of the results of his large experience in the study of the "Internal Secretion of the Ovary."

Our readers are assured of a splendid symposium, which will prove both helpful and inspiring.

American Medicine

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EDITED BY
and

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Experiences of the New York Health Department in typhoid immunization were described by Doctor Harris and Ogan in an article (*Jour. Am. Med. Ass'n*, Jan. 2, 1915) which is very disappointing. It contains nothing new and ignores the things we want to know of this valuable procedure. Besides, it is defensive in tone and substance, whereas the vaccine needs no defense. Though taken from the laboratory too soon, the sphere of vaccine is becoming as well defined as that of antitoxin. What we must learn are the contraindications and duration of the immunity. Too much has been suppressed by other writers. It is sheer folly to pretend that the vaccine had no relation to a subsequent ulcerative endocarditis in a man with a chronic heart lesion, and the failure to give the full history of the case leaves a painful impression. It implies that he did not become ill for two months, which is not correct. Even if he did not seek medical aid for that time, it does not disprove the accepted fact that normal immunity to pus organisms may be dangerously lessened. All agree now that the inoculated person must be in perfect health like soldiers. The statement that "severe reactions have never left permanent injury" is not true elsewhere, and besides, the histories of the New York cases have not been published. The injunction

to inoculated persons to avoid exposures and fatigue is wise, because an incipient active tuberculosis may become worse. The report confirms the German opinion that immunization is only for emergency. Even then we may hasten the onset of a typhoid if the injections are given after intimate and long exposure, though the French have had good results at Belfort (*Press Medicale*, Nov. 26). The article is dangerous because it fails to give any credit to the wonderful efficiency of sanitation in our mobilization camps. Curschman (*Münch. Med. Woch.*, Dec. 1, 1914) shows how sanitation alone aborted a mobilization epidemic. Sir Frederick Treves has been quoted as saying that eighteen per cent. of the typhoid in the British camps had been inoculated. Since it is now proved that the protection is not universal, absolute nor prolonged, complete freedom from typhoid means absence of infection. The statement that inoculation gives the same degree of immunity as a previous attack of typhoid has not been proved true and is only a guess of the fanatics. Civilians will not submit to inoculation every two or three years even if there is no risk, so the use of a vaccine to eliminate typhoid fever had better be abandoned at once as an iridescent dream. It is to be regretted that while this article is published in the *Jour. of the*

American Medical Association Gay's Harvey Lecture is buried in the *Archives of Internal Medicine* (see AMERICAN MEDICINE, Nov., 1914).

The health of the army and navy has been showing improvement ever since sanitation has been exact enough to permit intelligent application. The recent Annual Report states that in each service the year 1913 was the best on record, the admissions in the army having diminished to 671 per 1,000, and in the navy to 760. Some foreign armies have higher sick rates though they do not count trivial cases. When it is considered that these numbers include everyone excused from any part of duty, they point to a splendid state of efficiency of the medical personnel. It is rare for a civilian to go a year with no illness whatever, and yet three out of ten soldiers and sailors do. The public certainly should be proud of this achievement of military and naval doctors. Typhoid fever has practically disappeared, the army having had but four cases and two of these were infected prior to enlistment, one had had only one inoculation and in the fourth the immunity conferred two years previously had worn out. Sanitation must be given part of the credit for this wonderful showing because the navy had twenty-two cases, undoubtedly contracted in the infected ports visited. This seems to be about the percentage of failures reported from infected civil communities, but the soldiers are in more or less isolation and more easily guarded, and there has been no lessening of efforts to prevent typhoid by improved sanitation. The navy reports that the duration of immunity is not known. The army report says that typhoid prophylaxis is as potent a preventive against typhoid as vaccination

is against smallpox, but does not last as long, and recommends re-immunization every three years. Raison of the navy, on the other hand, says (*Bulletin*, Oct., 1914) that "successful vaccination confers a degree of protection (from smallpox) which lasts through life to a greater or less extent."

Tuberculosis following typhoid fever is more common than the profession believes, as was proved in the article published in AMERICAN MEDICINE, January, 1914. Dr. Louis J. Dublin, statistician of the Metropolitan Life Insurance Company of New York, reports, in an article read to the American Public Health Association (*Journal*, Jan., 1915) that among 1,428 who recovered from undoubted typhoid fever in 1911, the deaths were nearly three times the expected in the first year after, over twice the expected in the second, but in the third year less than expected, the percentages being 284, 217 and 80, the total for all three years being 204. Of the 54 deaths, 21 (39 per cent.) were due to tuberculosis, all but 3 being pulmonary. Heart diseases carried off 8, pneumonia and nephritis 4 each, and acute articular rheumatism 2. There were 146 deaths due to the fever, and as 27 of the deaths during the next three years can be laid to the original disease, it is evident that for every ten deaths from typhoid the community will suffer at least two more later, one being tuberculosis. This is the final proof, if any were needed of the accuracy of Hazen's law, that if a city's water supply is spreading typhoid, filtration or other means of purification will not only reduce the deaths from typhoid, but from many other diseases, chiefly tuberculosis, which have no relation to the water. Hazen calculated that

for every life saved from death by typhoid, two or three were saved from death by other causes, but Sedgwick and MacNutt concluded that it was far more. This can readily be accepted, since the infantile death rate drops because there is a great reduction of gastro-intestinal diseases spread by bad water. Seventy per cent. of Dublin's cases were less than twenty years of age, thirty-four per cent. less than ten, and 57.7 per cent. were females, as the women and children constitute the majority of cases in the nursing service from which the data were drawn. He estimates that in the whole country there are about 20,000 deaths a year from typhoid fever, and that 8,000 more die of its sequelae due to loss of their resistance to other diseases, chiefly tuberculosis and heart disease. Prendergast of Brooklyn reported that of 600 typhoids which had recovered, not one had returned to the hospital later with tuberculosis, which only shows how worthless some statistics can be. We hope that other infectious diseases will now be followed up as Dublin has these typhoids, and then we will have the proof that the tuberculosis death rate has declined since 1880, because health departments have so efficiently reduced the diseases which have been activating latent lesions.

Tuberculosis in the public services is the one black spot on their health records, for in spite of the hygienic life and wonderful sanitation there were 347 admissions among the 90,000 soldiers, and 325 among the 65,000 sailors. The census shows that tuberculosis caused but 11.2 per cent. of deaths in 1911 in the registration area, but in the army about 18 per cent. are due to this disease, to which must be added those who are discharged to die in civil life.

And this high rate too is at ages in which the rates in civil life are less than the average. If one in every two hundred of us became actively tubercular yearly, nearly half the population would die of consumption. This is appalling when we consider that they are picked young men of excellent health and physique. The army admission rate is nearly three times those of the armies in northern Europe and is among the worst in the world. Some years ago all modern navies were worried over the large tuberculosis rate, but the investigations of the cause were based on the assumption that the cases were newly infected. We may now concede that practically all soldiers and sailors are tubercular at enlistment and have been since childhood. Future investigators must find out what it is in army and navy life which breaks down the normal resistance so often in what should be a preventorium. Dublin's statistics show that the reduction of typhoid fever in the services should have been followed by a reduction of tuberculosis. In the army, tuberculosis did fluctuate with the typhoid until inoculation was made compulsory. The vaccine has often been charged with activating tuberculosis like tuberculin does, and the French will not give it to anyone suspected of the disease. Luckily resistance is soon restored except where climatic conditions or other adverse factors prevent. A careful study of each case should settle the matter, for though the disease is never recognized until long after it has been active, yet a careful history invariably elicits facts which approximately fix the origin. In the army there was a slight decrease in the United States which is thought to prove that the typhoid vaccine is not a cause of any. There was such an increase in the tropics that

the total rate was higher than in 1912. This is supposed to be due to the lengthening of the tour of duty but Dr. Gorgas has frequently asserted from his experience in Panama, there is nothing in a tropical climate to prevent permanent residence by northern men. It is evident that in civil communities where there is little or no chance of contracting typhoid, inoculation may cause more cases of consumption than it will save from typhoid. It would seem better, therefore, not to urge inoculation, unless typhoid is prevalent.

Carrier epidemics of typhoid have served to attract attention to food as the medium of infection in cases of obscure origin. Two years ago a serious outbreak occurred among soldiers at Hanau, Germany, and though American journals and newspapers paid little attention to it—far less than its importance deserved—the German press and even the Reichstag had much to say. Since no officers, or non-commissioned officers were attacked, but only privates of one battalion, it was easy to trace the infection to a kitchen woman who had prepared a potato salad eighteen hours before it was eaten. She had never touched prepared foods before, her work being largely cleaning up, paring potatoes, etc., so that though she had been employed for several years, and was excreting large numbers of bacilli she had had no chance of transferring them alive to those who ate from that kitchen. A very similar epidemic occurred in March, 1914, in the town of Hanford, California. It was investigated by Dr. Cross and reported by Dr. Wilbur Sawyer of the State Hygienic Laboratory at Berkeley (*Jour. Amer. Med. Ass'n*, Oct. 31, 1914). Of the 150 people who par-

took of a church supper, 93 were infected, including some mild or doubtful cases ordinarily overlooked. The infection was finally traced to a woman boarding house keeper who had prepared the spaghetti and who for some years had had an occasional boarder develop typhoid. The interesting point is that the dish was again cooked in an oven after it had left her hands, but later experiments showed that though the heat was sufficient to brown and sterilize the surface, it raised the interior only to a good incubating temperature. Cooked foods still warm when served are not as safe as we have been led to believe. These two epidemics gave very valuable information as to the period of incubation; the first California case developed in three days, the last in 29 days, but the sixth day gave the most. In Germany the early cases were taken sick in less than a week, and were so sharp at onset as to be considered influenza. The majority of the cases developed in about ten or fourteen days, and the last in about a month. That is, the period of incubation seems to depend upon the dosage and number able to survive the bactericidal juices of the stomach and other tissues. Unquestionably, nearly all who partook of the foods must have been infected but 43 per cent. of the Californians and 45 per cent. of the Germans were able to kill the invaders. Natural immunity may be stronger than we believe. Some of the soldiers were found to have become carriers but did not develop fever. It is interesting to note that neither of the women carriers nor our own "Typhoid Mary" is aware of ever having had typhoid fever.

The supervision of typhoid carriers has thus become of extreme practical importance. The British Army authorities have

reported that discharged carriers have not given typhoid to the civil communities in which they settled. The Germans have merely required carriers to be careful as to the discharges and avoid handling the food of others. All efforts at cure seem to have been given up,—even excision of the gall-bladder has not always been successful. We cannot confine carriers for life, but we must keep track of them to be sure they do not drift back to cooking. If such "infection factories" are allowed to disappear, they are sure to spread death broadcast. We ought not to be compelled to be constantly on guard against food infection, and it is outrageous that we must take a prophylactic vaccine if we visit localities where the death rate is high. Is it not time that all cooks and waiters of public eating places should be examined to detect carriers? The Pennsylvania Railroad is said to have barred sick men from employment in the dining car service, but that is only a beginning. The bacteriological examination of their discharges is necessary. The cost is not prohibitive. Similarly all those who handle milk should be examined, and by-the-way, there is immense room for improvement in the way milk is transported. It should be sufficiently chilled soon after drawn from the cow, and kept cold until consumed. Then if a few typhoid bacilli do enter in spite of all our care, they are not incubated and may not be sufficiently numerous to hurt anyone. If we will hunt up carriers and see to it that they do not infect water or food, we can let them do as they please in other matters. Regulated they are harmless, but with perfect freedom they are a menace—probably they are keeping up the dreadful typhoid record of many places in this country, where sanitation has not reached the high

level of Germany and Great Britain. When we are as clean in our habits as these European communities, we can afford to be lenient with carriers, but public opinion will soon demand a search for carriers and their regulation, so why not make a start? Hotels and restaurants will attract trade if they will prove that all their employees are certified by health officers to be free of typhoid infection or other communicable disease. In tracing typhoid fever infection in any case, let us suspect the food more than we have, and as the cook may be at fault, let us start with the premise of the French detectives—*cherchez la femme*.

"Typhoid Mary" who had dropped out of sight, to the consternation of not a few of those who realized how great a menace she was, has come again into the limelight, this time as the cause of the recent epidemic among the internes and nurses of the Sloane Maternity Hospital. As we go to press, the facts unfold and although this woman was released from custody on her solemn agreement not to do any more cooking or kitchen work, it appears she was engaged in this very occupation in the above institution. As soon as investigations were started she promptly took her departure, but fortunately was traced to Long Island and again placed under quarantine. Lack of space and time prevents as full consideration of this matter as it deserves, and we shall have to postpone its full discussion until next month. But one point stands out very plainly and that is some one is culpable for allowing this unfortunate woman to get away from under surveillance. Her constant danger to the public was well understood and to lose track of her entirely was a terrible mistake—if not worse. Under the circumstances the burden of re-

sponsibility is on the proper authorities and it would seem that the sufferers from such negligence have a good case against the city. It is high time that the contraction of typhoid fever was looked upon as the result of criminal negligence and the guilty parties held responsible. We shall refer to this phase of the question in detail next month. In the meantime, we hope "Typhoid Mary" will not get back into any of the kitchens of our city hospitals.

The preservation of foods ready for the table is quite an important matter now that we have traced so many deaths to improper methods. Before health authorities were so particular about milk, it was not uncommon to hear of fatalities from poisoning by ice cream or milk and we understand that formerly sausages quite frequently caused trouble in Germany though not so often now. All these cases can be traced to bacterial contamination and the preservation of the foods at a temperature permitting the organisms to grow. A very common mistake is to make a hash or croquette the evening before it is to be cooked and then allow it to remain warm all night. If raw meat is used and the weather is hot, serious results are likely to follow. Sometimes a large quantity of such preparations may be put into the refrigerator over night, but the center of the mass is not cooled and its contained bacteria multiply enormously. It may seem trite to call attention to these facts, yet it must be that they are not well known, since every summer witnesses a large number of fatal cases of food poisoning not only of those who frequent public eating places, but in private houses also. We have frequently mentioned the "indigestion of travellers" due to this cause and suggested a more rigid

control of such places, but it seems that accidents may happen in the most careful of restaurants in hot weather, if prepared foods are not kept cold enough to prevent a putrefaction which cannot be noticed by any change of taste and odor. It would be a good plan when eating at strange places to avoid such articles as salads and hashes in the same way we avoid milk of unknown and uncertified source. Our settlement workers may do a lot of good because the enormous summer increase of deaths from gastro-intestinal diseases is in part due to eating infected foods which have been kept too long and too warm. Ignorant mothers must be told that "summer diarrhea" is not caused by the summer although the heat may prevent a child recovering from a poisoning which would not be serious in winter. Dogs constantly make themselves sick by eating decayed food and the baby may be made "as sick as a dog" in the same way. We usually blame an enemy for poisoning our dog when it dies and blame the weather for poor baby's death, but it might be bad food in each case. Above all else we should remember the possibility that a "carrier" may have prepared any foods which have been kept warm a long time before use. In other words let us turn our search light on doubtful foods a little more than we have been doing, and tighten up the screws on public eating places.

Colloidal silver salts for cancer have been so popular abroad, especially in France, that it was quite natural they as well as other metals in this form should have been used extensively in this country for all malignant growths. The alleged im-

provement of cases may have been mere coincidences, for now the Annual Report of the George Crocker Cancer Research Fund of the College of Physicians and Surgeons of Columbia University states that there is no evidence that such preparations do any good at all. It would be interesting to learn exactly why this system of therapy should have enjoyed such wide popularity with so little basis of fact. It seems that in hopeless cases the profession is quite willing to use anything which holds out even the faintest hope, providing it is known to do no harm. We cannot blame ourselves for this apparent exploitation of manufactured drugs. We will probably always do this very thing as long as we have incurable cases. In the past, by such blind hit or miss trials, we have been able to turn the incurable into the curable and might be lucky again, so we cannot help "running after false gods" occasionally. The failure of colloidal metals will probably end any more trials with them, but we should not lose hope that sooner or later the remedy we seek will be found. In the meantime patients must be taken into our confidence. They do not lose anything nor do we, if we tell them candidly that a drug though highly praised by some, may in fact be of no efficacy. The sick invariably take the chance. We must help to ward off the utterly worthless things upon which incurables waste millions every year.

Castor oil seems to be growing in favor after having been in some disrepute for a decade or two, and the suspicion is around that it might have a specific action and possess more therapeutic virtue than even our

forefathers imputed to it. The recently discovered ill results of intestinal stasis have caused us to investigate the remarkable success of some of the physicians of two or three generations ago who were so wedded to the practice of giving laxatives—especially castor oil. Of course no one ever forgot for a minute that the retention of intestinal contents was a serious matter and perhaps every successful physician always makes a routine practice of clearing out the bowels, the only new point in this direction is the realization that the effects of milder forms of constipation may be more far-reaching than we moderns are quite willing to concede. Some, perhaps many, are still hesitating. No matter what we may think on the subject, it will do no harm to observe the action of castor oil a little more closely. Many a mother has apparently warded off little sicknesses and perhaps big ones by its timely administration, and many a peevish, hateful fretful child has thus been changed into the dearest little bit of loveliness that ever lived—even if it were as ugly as a mud fence to everyone except its doting parents. We have heard a story of an English matron who would not discharge or scold her servants when they became cross, but lined them all up and gave each a dose of castor oil, after which they were a joy to the household for a few weeks or months. We forgot all these things when we learned the role of infections and it became fashionable to sneer at our old teachers. It is not reactionary to halt a little in our tendency to seize the new for we ought not to lose hold of the old until the new is found to be better, nor should we forget that there are other poisons besides those made by bacterial cells. As in the

case of ipecac, castor oil may have unsuspected virtues which were dimly and empirically observed. We do not know of course, but the suggestion is made with the hope that in this, as well as other old drugs, we look more closely into the experiences of our medical forefathers—some of whom were far keener observers than we have been willing to admit—not *post hoc* men but true, *propter hoc*.

Racial psychiatry received long deserved attention at the meeting of the New York Neurological Society on April 7, 1914 in a discussion of a paper on Insanity Among Jews, presented by A. A. Brill and M. J. Krapas. (*N. Y. Med. Rec.*, Oct. 3, 1914). The authors had made an extensive study of their subject in the institutions of New York City and found that there was no basis for the frequent assertions both here and abroad that Jews furnished a higher percentage of mental disease than other races, or perhaps it would be best to say religious sects, since not a few are convinced that the Jews are no more a pure race than for instance, the English or the Mohammedans. The discussion brought out considerable distrust of statistics. Rural families often keep their feeble minded and insane at home while city dwellers like the Jews are compelled to send them to institutions to avoid annoying the neighbors. On the other hand European Jews frequently care for their afflicted ones at home. Though there was considerable difference of opinion, the general impression gathered by one who has not given any study to the matter, is that we are all made of the same clay, and that the same percentage of every population, race, sect or nation suffers from mental disease. It is

no doubt true that Italians furnish an undue number of epileptics to our asylums, the Irish an enormously disproportionate number of alcoholic psychoses and the Jews a high percentage of dementia precox, maniac-depressive insanity and feeble-mindedness, but perhaps some of this can be explained by the age distributions of these elements of our population. On the other hand the alcoholic record of the Irish has been referred by Austin O'Malley to nervous exhaustion from climatic unfitness. This side of the question was not brought out at all in the discussion though it is possibly the most important. It is a well known fact that when a man migrates to a climate markedly different from the one which evolved his physique, the adverse factors, like excessive heat, light, cold, moisture or dryness, etc., will damage the nervous system so that all kinds of nervous and mental diseases occur more frequently than among natives. It will probably be found that insanity here is greater among the people from climates markedly different from this, and in all cases somewhat more than in the European environment they left. We hope this phase of the matter will receive attention in the studies now being carried on in racial psychiatry.

Addition to Editorial Staff.—We take pleasure in announcing that Dr. John W. Wainwright formerly editor of the *American Practitioner* has joined the editorial staff of AMERICAN MEDICINE. Dr. Wainwright will conduct our new department, Modern Remedies, and contribute otherwise to the various editorial departments of this journal. We consider ourselves fortunate indeed in having Dr. Wainwright associated with us.



MEN AND THINGS

Overcrowding—A Problem of Modern Sanitation.—The Health Department of New York City is in many respects the most progressive and most advanced in the world. It has done much excellent pioneer work in sanitary reform and has blazed a trail that has shown many other health boards how far reaching their duties are as supervisors of the public health. It will be superfluous to mention in detail the many schemes which have been brought forward and carried into effect by successive health commissioners of this city. He who runs may read.

The New York Health Department has been extremely fortunate as a rule in having at its head, men not only with great initiative but men with the brains and energy to bring their conceptions to a successful issue. To Dr. Stephen Smith is due the honor not only of having placed the New York Board of Health on a sound basis, but of being the moving spirit in procuring for the Board a very considerable enlargement of its powers. Unquestionably these powers have rendered it possible for the department to do the good work it has in furtherance of sanitary reform in so many directions. Thus in regard to certain problems pertaining to transportation: during many years the transit arrangements of New York City have been inadequate and defective in many particulars. It is notorious that at certain hours of the day the overcrowding is terrible in surface, elevated and subway cars. This overcrowding is not an ordinary accumulation of people, but consists of a packing of human beings together so closely as to be a serious detriment to health, morals and decency. Dr. Goldwater, the present efficient Health Commissioner, has taken cognizance of these conditions, and supported by the Mayor has recently set afoot steps to remedy this almost intolerable state of affairs.

The Mayor in a letter to Dr. Goldwater, pointed out that Section 1,176 of the City Charter reads in part as follows: "Whenever any business pursuit shall in the opinion of the Board of Health be in a condition or in effect dangerous to life or health, said board may enter in its records the same as a nuisance, and order the same to be removed, abated, suppressed or improved." The Board has accordingly entered in its records that the conditions on city railroads constitute a nuisance and at a meeting held a short time ago, passed resolutions with an accompanying order to the railroads stating that since it is well established that certain communicable diseases, notably the respiratory diseases, such as bronchitis, influenza and tuberculosis, are spread by intimate contact with infected persons, overcrowding as it occurs in the subway, surface and elevated cars is a grave menace to health. It was ordered that traffic on certain surface lines should be so regulated that the total number of passengers of any such car, at any time, shall not exceed one and one-half times the seating capacity of the car. These orders referred to certain surface car lines in regard to which Dr. Goldwater had personal knowledge, but it is said not to be his intention to confine his interference in the interests of health and decency to these particular lines. Indeed he has publicly announced that he means to use his utmost endeavors and the powers granted to the department to remedy the very obvious evils prevalent in all the transit lines of the city. As may well be believed by anyone who has knowledge of the methods of corporations, these orders, mainly on account of their unprecedented nature have aroused much criticism, a considerable amount of comment, and have given rise to some misunderstanding. The *Weekly Bulletin of the Department of Health*, Feb. 26, 1915,

points out that it is to be observed that the orders are not general orders, but relate to specific nuisances which the railroad companies are requested to abate. It is generally conceded that the conformation of Manhattan Island makes the problem of providing transportation facilities for all those who have to travel to and from business an extremely difficult one. The question that arises, however, is this, do the companies use their best efforts to solve the problem? To the sanitarian the answer appears to be that they assuredly do not. The claim is advanced by the Health Department, and amply corroborated by the testimony of numerous citizens, that the transit companies are not considering public health at all. Some one has said that corporations have no souls. It has been likewise reported that corporation magnates are dominated by the sentiment "the public be d—d." We are not of those who see only evil in public corporations, but it seems to be a fact that the men who are charged with the management of the means of transit in New York City are supremely indifferent to the health and comfort of their patrons. Dr. Goldwater has been said to have exceeded his authority in his attempts to render the car service of New York safe, sanitary and decent. Such criticism is uncalled for, for he has as much right to supervise the sanitary conditions of the railroad facilities within the limits of the city as he has of the tenement houses. The overcrowding of cars to the degree that is now the rule in New York City certainly constitutes a distinct menace to the public health, since it contributes directly to the spreading of infectious diseases. If Dr. Goldwater succeeds in persuading or forcing the city railroad authorities to improve conditions on their lines, for instance, by putting more cars on or by regulating traffic in some practical but effective way during the rush hours, he will have performed a service in the interests of public health and decency, the magnitude of which can hardly be overestimated. Our earnest hopes and good wishes are surely with this capable official who has had the courage to attack in so fearless a way one of the greatest evils that confronts the people of New York City. Dr. Goldwater may count on the support not only of the medical profession but of every thoughtful person.

The physiology of hibernation has never been satisfactorily explained, but sometime before the present war it was reported from Russia that Professor Bakhmetieff of Moscow had found that it was due to a substance which he called anabiose. If true, the matter is of considerable economic importance, since it might be possible to place domestic stock in this condition to tide them over periods when food is scarce. Indeed, he claims to have done this. Unfortunately there has been no scientific confirmation of the reports. Bakhmetieff is said to have specialized in the study of the effects of cold, and made his alleged discovery in this way. The effects of cold on men are now of considerable therapeutic importance, though we know little about them except the empiric fact that in certain diseases the breathing of cold air is highly beneficial. Would it not be wise for some of the research folks to take it up? Those who have lived in very cold places know that the air seems to have a somnolent effect, and travelers have asserted that Eskimos and Siberians are able to sleep long periods in cold weather when food is scarce. Mr. H. G. Wells in his description of the fanciful inhabitants of the moon, who were imagined to be intelligent crustaceans, imputed to them the power to induce hibernation in workmen during periods of idleness, by means of injections of certain chemicals, and it does not seem so absurd after all. It is mentioned here merely to emphasize our present ignorance of the physiologic and therapeutic effects of merely breathing very cold air, and the possibility that there are discoverable changes in the composition of the blood which we could duplicate by means of chemicals made in the laboratory. The few experiments made by Ronald Ross, show that cold air does cause remarkable alterations in immunity, and it is rather amazing that our research workers have so completely ignored this fruitful field. Simon Baruch has stated that as a rule, the air of sick rooms for infectious cases should not be above 60° F. The whole subject then is of such vital practical importance that we hope it will be made a special study in a special laboratory. Another chance for rich men to cut down the inheritance tax on their estates by joining the increasing army of benefactors of great wealth.

The Conquest of Typhus.—No better proof is needed of the conquest of typhus than the small space it has occupied in the dispatches from the seat of war. There are millions of men living in conditions ideal for the spread of this infection and in an endemic territory at that, yet only a few hundred cases have been mentioned. It was once called army fever, but surely the armies have been notably free from it in this conflict. In fact it has ceased to be one of the horrors of war simply because some American investigators discovered that it is transmitted by body lice. If the patient is cleaned up and put in a clean bed he ceases to be a danger. Formerly it was said jokingly that no recruit was considered a real soldier until he found a louse on himself. Now-a-days, personal cleanliness is carried to such a point that a vermin infected soldier is liable to face court-martial for neglect of duty. There are short periods when bathing is impossible but relief comes before one becomes infected. Even in the trenches, we hear of quite elaborate toilet facilities. Here then is an instance of how modern sanitation has modified warfare as well as life in cities. There is enough typhus infection in all our cities to cause frightful epidemics if the people lived as they did a century ago, but no one seems to mind it. When a case goes to the hospital it instantly becomes harmless and is generally considered typhoid. If we knew as little about sanitation as we did in 1880, the present war would be impossible on account of the epidemics which would now be wiping out the armies. In former times troops were healthy only when they were on the march. They ran away from their own poisons, but when they stayed a long time at one spot and could not remove their own poisons, they died of disease. It is rather sad that every great invention or discovery in time of peace is eventually used to prolong war or make it more effective. Yet that thought should not detract from the honors paid to the men who have made life safer in both peace and war. Particularly in the case of typhus, it is timely to refer to our own Dr. Howard Taylor Ricketts, who lost his life as a result of his labors in finding out how typhus was transmitted from sick to well—killed by the very disease he had really conquered. He is one of the heroes of this war.

Prophylaxis and Hygiene.—From conception to death human life is menaced by ignorance. Even *in utero* the well being of the child is assailed by excesses and omissions of the mother which may lead to chorea, malassimilation, epilepsy, convulsions, hysteria, insanity or marasmus; while following birth mistakes or indifference lead to impaired sight and various forms of infection. Happily in this age of the trained nurse, these factors are largely modified and will, it is hoped, in time disappear. In youth we see the necessity for a knowledge and application of prophylaxis and hygienic laws. Those of both sexes should be instructed in these laws, that their lives and the lives of those to come after and through them may be preserved and healthy bodies and minds assured.

Even after death is man a menace to those who remain behind, the avoidance of which, in the opinions of many scientists, can be assured only by cremation.

Diathermia.—That an electric current of 1,000 volts is equal in food value to a porterhouse steak with potato chips is the opinion of Prof. Bergonie, a Bordeaux scientist. Prof. Bergonie announced his theory early in the fall. Since then he has been carrying out experiments which fully bear out the theory that food can be replaced by electricity.

In a communication to the Academy of Science Prof. Bergonie says that diathermy, the method of applying a current of low tension and high frequency, may partly supplant food by furnishing the body with a great quantity of heat and saving the digestive organs from overwork. This current traverses the body without provoking the least pain, and, given with an intensity of from two to three amperes and at a voltage of from 1,000 to 2,500 furnishes about 1,000 calories an hour—more than one-third of the heat supplied by one's daily food.

A man of average height, but unusually light in weight, was treated by Prof. Bergonie. He used to eat a good deal of meat, but had hardly strength to walk, and always felt very cold. The professor gave the patient a course of diathermy, and after a series of electric applications lasting forty minutes each, during which time he

absorbed 1,700 calories, his weight increased considerably. Now he eats less and has more energy.

Prof. Bergonie foresees the time when all troubles arising from insufficient food will disappear by a reasonable application of the high frequency current discovered by Prof. D'Arsonval.

Progress or Otherwise.—Just how much or how little a man may know is sooner or later sure to be shown, he himself disclosing quantitatively as well as qualitatively, his make-up. The exhibit is sometimes humorous, but more often pathetic in that he has not the realization of a common infirmity, a lack of the sense of obligation to others. The veneer of education and refinement is thin on most of us; we are all sons of Father Adam and have inherited many of his frailties as did Cain, and much of his better self as did Abel. Cain asked his father, was he his brother's keeper, and this question has come thundering down the ages until it is still propounded in all countries and in all tongues. The attitude of the questioner is still one of negation. The aphorism uttered by the Prince of Peace, "Do unto others as you would have others do unto you," is as little observed today as when uttered. It is doubtless true that all men are born equal in so far as a right to live is concerned, but traits inherited or acquired are still in evidence to make all men unlike as in the days of Cain and Abel. And the pity of our existence is that it is mainly the Cains who rule.

Dust, the Ubiquitous.—Dust is indeed omnipresent, particularly in New York City just now when subway excavation and building construction are so much in evidence. And yet our rural districts suffer to an equal if not greater degree for it will be difficult to find an habitation however "far from the madding crowd" that does not know the "plague of dust," in these days of railroads, trolley cars and automobiles.

In cities the dust problem is becoming more serious day by day; while in densely populated agricultural districts great damage is being done similarly not only to the population but to the forests and fruit

trees, plant and vegetable life. The automobile aggravates the situation in the country as well as in our parks and on our streets by pulling after it a cloud of dust which swirls around it, distributing micro-organisms impartially on all sides.

Not only on our streets and highways, but in our offices, theaters and homes is dust in constant evidence. Still our floors must be covered with carpets, which are tacked to the floor and taken up and cleaned only once or possibly twice a year; the antiquated broom and feather duster continue as indispensable articles in many a good household. Why will we tolerate all this when beautiful rugs and vacuum cleaners are so cheap?

False Premises.—We learn that the physical director of the West Side Young Men's Christian Association of New York City is responsible for the statement that "more than two thousand men have been given physical examinations at this association during the year just passed. Many of them were men of forty years of age and less, but they had all the symptoms of old age and senile breakdown."

This can hardly represent the conditions of the New York man of forty and less, for we have been observant of these men as seen in our homes, offices, in the streets, cafés and restaurants for nearly thirty years, and while there are frequenters of cafés and restaurants who seem aged beyond their years, we have carried the impression that it was the exception rather than the rule. It is true that there are many comparatively young men with gray hair, but does this now count for much in determining their age? We rather incline to the belief that it is only or largely the man of impaired health who seeks an opinion of a physical director of a gymnasium, as is true of him who consults the physician. A very small proportion of men frequent a gymnasium or indeed consult a physician until he has a fancied or real complaint. It is doubtless true that we indulge our appetites too freely and take less exercise than we need, but this is rarely fatal. Then, some of us are forced to work hard, but this cannot always be remedied, and it may not be fraught with as much harm as many suppose.

We are of the opinion that New York men and women reach as great an age in as good health as anywhere else. Excesses are as rare, temperance as much in evidence here as in other cities; besides all men found in cafés and all night restaurants are not New Yorkers. Some doubt may be entertained as to whether or not a gymnasium is the place to gather statistics for a city of over five million citizens; the homes, theaters, churches, and our busy offices may be better places after all to look for facts as to premature old age or senility.

Twilight Sleep Again.—We learn through the daily press that a number of ladies have associated themselves together for the purpose of compelling physicians to employ the so-called "Twilight Sleep." In the discussion at a recent meeting numbering several hundreds, they declared having satisfied themselves that the method is easy of application, does away with pain and anguish and is life saving. The organization proposes to compel physicians, in New York particularly, to make use of the procedure in all cases. Individual members of the profession are to be interviewed and an unequivocal answer obtained as to whether they do or will employ the method. Names of those answering in the affirmative as well as in the negative will be listed. Expectant mothers will be furnished with this list showing the doctors for and against the German method, and urged to employ only those who declare in favor of it.

This arbitrary proceeding cannot fail to arouse a strenuous protest from physicians for it is certain that they will not be stampeded by these misguided ladies. It would be interesting to know whether these are not the same people who are opposed to vaccination and vivisection. No doubt scopolamin and morphine have been successfully employed in child birth by competent men; their use may be encouraged in carefully selected cases but not as a routine procedure; there are numerous contraindications and these must be determined by those familiar with their combined action. To demand its use in every case of child birth will be certain to enlarge our mortality statistics very considerably.

A Professional Asset.—Enthusiasm is described as an ecstasy of mind; an enthusiast one who has devotion to a belief or principle; or one in the pursuit of an aim or object; one of ardent zeal. An enthusiast is one who has a belief in self and the persistency to accomplish a self-imposed task or duty. In this sense it is enthusiasm which has moved the thoughts of the world; that which has secured results by tenacity of purpose of one who has a firm belief in himself and his aims. Through this quality of mind all innovations have assuredly been brought about. Science, religion, conquest, in a word success has come to the enthusiast, who is always an optimist. Without enthusiasm there would be no real progress. All men who have accomplished great deeds have been enthusiasts. Their enthusiasm or optimism surrounded them with admirers who sought to emulate their deeds. Enthusiasm is the opposite of idleness, of enervation, of decay. Those lacking in enthusiasm are apt to be pessimists.

Enthusiasm will be found a great asset to the professional man. If a physician, he will bring sunshine and joy into the sick-room; he will reflect it all about himself, while his patients will improve; those of the pessimist will decline. No one can come into the presence of an enthusiast without being impressed with this spirit of hope and confidence.

Occasionally excessive zeal leads to disaster for there is a border line between enthusiasm and misdirected zeal, but what was good in us, even though we fail, will be taken up by others sooner or later who will be able to carry the work along and add something to what we had accomplished; and thus, if we were not entirely mistaken or misdirected, will in time come to pass what we were striving for; this is the story of human progress.

Heart Failure.—The increase of sudden deaths attributed to heart failure is a subject which is of such importance that some remarks relating to etiology and prophylaxis would seem to be called for. In New York City we read daily of sudden deaths in various situations and are told by the lay press that they are due to

heart failure. Whether physicians called in such cases are warranted from a scientific point of view or in truth in so declaring, any more than they would be to state that the deceased came to his death from breath failure is a debatable question. Obviously, all persons die from one or both of these causes. Heart failure covers a multitude of causes of death, and its utterance upon occasions of sudden death serves no definite or particular purpose except to distress those who may have a palpitation of the heart upon unusual exertion, after a full meal, vertigo, increased heart beat accompanying gastric dilatation, a mild syncope from nervous conditions, etc. Over these hangs the fear of heart failure and sudden death. The psychic effect of this suspended doom is ever present with such persons, and works havoc not only with their peace of mind, but unquestionably has often proven disastrous.

There are many sudden deaths, and that the heart is a potent factor therein is undoubtedly true. This being admitted, let us inquire into the causes. First, we do not, many of us, place a limit to our endurance. There is too much hurry. Over and continuous stimulation and indulgence in food and drink, lack of exercise, prolonged mental excitement, physical strain, loss of sleep, and numerous other elements are to be considered. Most of these are avoidable. A study of the etiology will suggest the prophylaxis.

As the majority of the cases of sudden death under discussion are in those past middle life, or after senile changes are well under way, such causative factors as would apply to toxemias following or accompanying infectious diseases of childhood, do not here assume great importance. It is the abuse of the normal functions during maturity which brings us face to face with sudden death. The heart, brain and stomach are coordinating, and we must learn to lessen the effects of general strain on their respective functions. Until we can realize this and practice it daily, until we can exercise moderation in all things, we will be subject to distress unawares.

trouble by eating between meals. Men indulge in a portion of an attractive free lunch, a bite of this, another of something else; a meat or cheese sandwich, a salad, pickle, sardine or sweet; a portion of a stew, a chowder, in possibly several places during the day; while women and children find their way to the pantry or ice box, the box of chocolates or other sweets, fruits, crackers, a bite of this or that, whatever is available; all of which disturbs the appetite for a full meal at the proper time. If instead we would drink water between meals, plenty of it, we would flush out the intestinal tract, assist the functions of digestion, aid in preventing or in correcting constipation and avoid gastric disturbance.

The Number Seven.—Sacred and profane histories are full of legends, traditions, and adaptations of this number (*The Medical News*). The Bible is full of references to it; witness the account of the creation; the seven years of plenty and the seven of famine. Jacob served seven years for Rachael; was then betrothed to Leah, and served seven more for Rachael. There were the seven churches; the seven golden candlesticks. Later we have the seven wise men; the seven champions of Christendom, the seven heavens.

It is perhaps impossible to discover in what country or at what time, the beliefs now common regarding the seventh son or daughter, originated. For the most part this peculiarity of birth carried a healing power, an ability to cure diseases by touch or other means. These virtues are intensified in the seventh son of a seventh son. In Cornwall the peasants believe that a seventh son can cure king's evil (scrofula) by touch. The mode of proceeding is to stroke the part afflicted thrice gently; to blow upon it three times; to repeat a form of words, and to give the sufferer a perforated coin to be worn as an amulet. In Ireland the seventh son of a seventh son is believed to possess prophetic as well as healing powers. France also believes in the seventh son. In Orleans, if a family had seven sons and no daughter, the seventh was called a "Marcon"; is branded with a fleur-de-lis, and is believed to possess the power of curing the king's evil. In some of the states of Germany it was

Eating Between Meals.—We believe that many persons bring on digestive

formerly the custom for the reigning prince to stand sponsor for a seventh son of his subjects.

It was the custom in England as early as the time of the Plantagenets (1154-1485), for the king on a particular holiday to bless the cramp rings at the church of Westminster. These rings, composed of seven pieces of silver, were begged from seven different persons. The maker was to get his pay from the silver saved in the process of making. He was not to be paid anything by the owner. These rings were for the cure of fits. Such rings for the cure of rheumatism are made and worn in this city today, and some people have great faith in them.

The seven ages of man were times at which it was supposed important changes might be expected to take place. The end of the first seven years marked the change from the infantile to the permanent teeth; the fourteenth year, from childhood to youth; the twenty-first year, the beginning of adult life; the thirty-fifth year, the climax of manhood, the middle point of the scriptural three score years and ten. The sixty-third year was the grand climacteric, the beginning of the descent to extreme old age and death.

Coughing and Sneezing in Public.—

It is surprising that sanitarians have paid so little attention to the grave dangers from sneezing in public or private places without covering the nose and mouth with a handkerchief. A no less dangerous and reprehensible habit is that of coughing without employing similar protection. We have ordinances and statutes forbidding spitting on sidewalks, in public buildings and conveyances, but nothing relating to sneezing or coughing, both more dangerous to public or individual health than expectorating. A great change has resulted through such ordinances, with the threatened fines posted in public conveyances, but not without protest, for there were and still are those who believe that such enactments are restrictions of personal rights. They are oblivious or indifferent to the rights or comforts of others.

In coughing or sneezing infectious germs are thrown into the air for an almost in-

credible distance, each offender thus creating zones of danger that constantly menace those unfortunate enough to be in the vicinity. This danger is naturally increased indoors, in closed places or conveyances. In some diseased conditions coughing is unavoidable and necessary, as is sneezing and spitting, but any or all of such acts can be indulged in without menace to others by placing before and holding close up against the face a clean handkerchief which should afterward be quietly and carefully placed in the pocket and not flaunted in the air.

It is a common practice for women to carry their handkerchiefs in a hand bag with their purses and numerous other articles, toilet and otherwise. They will cough, sneeze, expectorate into the handkerchief, then place it in the handbag to contaminate other articles, perhaps money which they sooner or later pass out for carfare or other purposes. This spreads infection broadcast. If they cannot have pockets in their dresses, coats or jackets, why not an outer and separate pocket not in, but connected with the bag and thus afford themselves as well as others some degree of protection?

We could soon stop these dangerous habits if every one would take upon himself the duty of joining in a crusade not only against the man who expectorates, but those who sneeze and cough in public places without protecting the face with a handkerchief, for thus only can we do away with this disgusting practice that menaces public health and outrages common decency. Better, an educational propaganda should be started by our state and city boards of health. It should begin in the public schools from whence it will soon reach the home. Public places and conveyances should be posted. Let the people know how dangerous as well as vulgar it is to cough, sneeze or spit in the home or elsewhere and improvement will follow.

Meatless cookery is the title of a book by Maria M. Gillmore of New York and published by Dutton & Co. It is a collection of recipes of dishes which do not contain meat or its extracts, to which are added some ways of preparing chicken and

eggs if these are permissible to the invalid. There have been other publications of this sort to fill a demand of vegetarians who have abjured meat for sentimental reasons, but this work is designed for invalids who have been placed on a restricted diet by their physicians on strictly scientific grounds. An introduction by Dr. L. F. Bishop of New York shows the necessity for some such collection of well tried recipes. We have not had time to partake of the hundreds of dishes described in the book, but from the samples laid before us, we will risk recommending all of them. When a member of a household is put on a meatless diet, even forbidden eggs and seafood, the housekeeper and cook give up in despair. So it would not be a bad idea for every household to have such a work of reference in place of the old family medicine book. If the elderly members of a family are really eating more proteins than is good for them, they could be more easily weaned from their evil ways, by palatable vegetable dishes. We have always had a mania for dressing up the meats to make them palatable, but dump the vegetables on the table in their native nakedness. A little reform of domestic economy would not be out of place anyhow. Besides the increasing costs of meat may make it necessary to dress up our vegetables more attractively.

Report of the Committee in Charge of American Fund for Belgian Physicians.—The contributions have continued to come in and the Committee have forwarded another cash donation of \$200. We regret that we have not been able to send larger sums to our afflicted brethren in Belgium, but when we study our list of contributors and realize how many have taken part in this movement, we are deeply gratified. The great majority of the contributions are well under five dollars. Consequently a great many different individuals are represented in this Fund, a matter for congratulation as we pointed out last month. There have been few winters when the demands for charity have been so many as in that just passed. The large number of small contributions that have been sent in to this Fund, plainly show us that the appeal for Belgian physicians struck a responsive chord, but among many who had already given to other needy causes, or who had other calls on their charity and could only spare part of their available funds.

In view of the greater facilities of the committee organized in December by Dr. Franklin H. Martin of Chicago and the larger opportunities it is assured by reason of the cooperation given by the great medical weeklies, the *J. A. M. A.*, the *Medical Record*, the *New York*

Medical Journal and the *Boston Medical and Surgical Journal*, the present Committee will close its work with the publication of its next report in the April issue of *AMERICAN MEDICINE*. Such contributions as may be received up to April 25th will be accepted and acknowledged. All sums that come in after that date will be turned over to Dr. F. F. Simpson, Pittsburg, Pa., Treasurer. Following are the contributions received since our February issue:

Previously recorded	\$1,314.75
Dr. C. B. Walrad, Johnstown, N. Y.....	1.00
Dr. Clarence Dingman, Spring Valley	1.00
Dr. H. C. Miller, Rensselaer, N. Y.....	5.00
Dr. Benj. F. Rogers, Buffalo, N. Y.....	2.00
Dr. E. A. Rust, Moira, N. Y.	5.00
Dr. John Meriweather, Richmond, Va.	2.00
A Doctor Friend, Richmond, Va.....	1.00
Dr. Luella M. Master, Thorntown, Ind..	1.00
Dr. Eugene Baker, Ithaca, N. Y.....	1.00
A Doctor, Richmond, Va.....	1.00
Dr. Walter E. Walker, Burlington, N. C.	1.00
Dr. E. T. Dickinson, Wilson, N. C.....	5.00
Dr. James T. Langhead, Terre Haute.	1.00
Dr. John S. Sproule, Warren, Indiana..	1.00
Dr. G. A. Brown, Mount Ulla, N. C.....	1.00
Dr. R. H. Brown, Mount Vernon, N. J..	5.00
Dr. Albert E. Wilson, Norfolk, Va.....	1.00
Dr. Ralph Robinson, Lackawanna, N. Y.	1.00
Dr. Lois S. Smalley, Central Islip, N. Y.	1.00
Dr. W. E. Wilson, Sherrills Ford, N. C.	.50
Dr. W. P. Whittington, Asheville, N. C.	1.00
Dr. S. S. Northington, South Hill, Va...	2.50
Dr. E. L. Welbourn, Union City, Ind...	1.00
Dr. Walter H. Sanford, Kings Park, N. Y.	1.00
Dr. Edward J. Moseley, Jr., Richmond.	2.00
Dr. Charles W. Moseley, Greensboro, N. C.	1.00
Dr. A. M. Smith, Petersburg, Va.....	1.00
Dr. Albert Bowen, Rochester, N. Y.....	1.00
Dr. D. F. Young, Phoenix, N. Y.....	2.00
Dr. G. H. Costner, Lincolnton, N. C.....	5.00
Dr. Chas. W. Mackey, Portland, Ind...	2.00
Dr. Abram T. Kerr, Ithaca, N. Y.....	2.00
Dr. F. M. Gustin, Union City, Ind.....	1.00
Dr. E. P. Easley, New Albany, Ind.....	2.00
Dr. G. W. H. Kemper, Muncie, Ind.....	1.00
A Friend, Nopeming, Minn.	2.00
Dr. H. R. Spickerman, Muncie, Ind.....	1.00
Dr. E. Ray Royer, North Salem, Ind...	1.00
Dr. I. M. Casebeer, Newport, Ind.....	.50
Dr. DeLancey Rochester, Buffalo, N. Y.	10.00
Dr. A. Grunewaldt, San Francisco, Cal.	1.00
Dr. Ethan H. Smith, San Francisco.	5.00
Dr. O. J. Goffin, Portland, Oregon	2.00
Dr. Henry W. Coe, Portland, Oregon...	5.00
Dr. W. B. Parsons, Portland, Oregon...	1.00
Dr. L. E. Reed, Portland, Oregon.....	1.00
Dr. S. M. Gellert, Portland, Oregon....	2.00
A Friend, Rutland Vt.	2.00

\$1,411.25

In our final report in the next number of *AMERICAN MEDICINE* a full statement in regard to the Fund will appear with complete digest of contributions, etc.

Respectfully submitted,

H. EDWIN LEWIS,
For the Committee.



DYSPEPSIA.

BY

BEVERLEY ROBINSON, M. D.,
New York.

The name dyspepsia which is equivalent to indigestion must still be retained, whether it affects the stomach, the intestine or both.

Despite all the advances made in latter years, we cannot always tell precisely what the cause of the trouble is. Especially, is this true of the functional, or nervous disturbances.

When the anatomical changes in the stomach are very doubtful, if indeed, any at all exist, the symptoms may be very obstinate and wise empiricism with repeated trials of various drugs, or combinations of them, will alone in the end, bring about relief, or cure.

We may form, as we believe, an accurate diagnosis of hyperchlorhydria, hypochlorhydria, achylia gastrica, spasm of the cardia and pylorus, or even of dilatation and impaired motility, and yet the direct contrary of what seems to be rational treatment will ultimately prove the most successful. So it is the old views and old-time remedies come out ahead frequently, when the reports from the laboratory are practically delusive, or incorrect.

"The therapeutic test based on a carefully taken anamnesis, a thorough physical examination, and a generous use of common

sense, will in the long run prove more satisfactory."¹

The ailments of the stomach, functional in nature, are very numerous in ordinary practice and none requires more care and wise interpretation to help, or cure. To deal with them successfully, one must study the personality of the individual, as well as the mode of life and also, hereditary predisposition. Take for example the quick, active, ambitious man of middle age, whose father was not unlike him. With many cares and anxieties at home and downtown, he is so busy and preoccupied, that he gives but a short half hour to his lunch and not infrequently bolts the food which calls for time and equanimity properly to digest. Without these two essentials the gastric secretions cannot remain normal, or sufficient any length of time.

What then should he eat under the circumstances, to cause least digestive disturbance? Evidently, it must be properly selected food which is very assimilable. In general, liquid, or semi-solid, simply prepared, nutriment is best as this makes slightest demand upon the saliva and gastric fluids. Why is this? Simply because we know that mental and bodily fatigue daily for any length of time, leads to morbid changes of gastric juice and normal motility of stomach walls, through disordered innervation.

¹ A. L. Holland, *Med. Record*, Nov. 21, 1914, page 1011.

Hence we may have increase of hydrochloric acid, or total acidity, and also, of ferments. With this ere long, some spasm of the cardia and pylorus is not uncommon. Hence slow digestion with accompanying weight, or slight pain at the epigastrium, eructations of gas, regurgitation of acid fluid, coated tongue, bad taste in mouth, headache. The bowels are ordinarily constipated and the liver torpid, as shown by the stools, the sub-icteric hue of skin, or conjunctiva, and excess of lithates in the urine. Such a condition cannot be treated effectively unless the habits are changed, but this is often difficult, sometimes impracticable, for a time. Meanwhile we must temporize and prescribe what will give most immediate and temporary relief. A pill of blue mass, 3 to 5 grains, at bedtime followed by a little Hunyadi, or Apenta water in the morning, to decongest the liver and give one, or more, loose movements, and the drinking freely of Celestins or Saratoga vichy between meals, will often improve the condition very much.

The constipated habit should be remedied with cascarn, podophyllin and aloin, as a dinner pill, or at bedtime. If these means are insufficient, the essence of pepsin, or a tablet of pancreatin, may be advisable to promote digestion. The compound rhubarb powder, 5 to 10 grains, in a wafer with a mouthful of water, 20 minutes before meals, is also, a very good remedy.¹ If there be great pain and acidity, the milk of bismuth is most useful, given in teaspoonful doses, every hour or two.

Too often in these cases and where the mid-day meal has been very light in view of following medical advice, the late dinner continues to be more abundant and of

richer quality than can be digested with comfort. In such an instance, again, great abstemiousness as to food, or alcoholic stimulant must be strictly enforced. A small quantity of French or Italian Vermouth taken just before eating, may help digestion—but after this, nothing further in the way of stimulant during the meal should be taken. A good table water like White Rock, is desirable.

All mixed sauces are severely interdicted and sweets only allowed in small proportion, and of simple nature, such as some light pudding, blanc-mange, or jelly. Cake and pastry must be forbidden and after dinner coffee rarely allowed. A small quantity of the best brandy or liquor, is at times permissible. In such cases too often, especially in men of robust build and sanguine temperament, the apparent stomachal unrest and insufficiency, is directly due to a congested liver, in the first instance. For this reason we often find that a trip abroad and a cure at Hamburg, or Carlsbad, are remedial when other means have failed to ameliorate, or cure.

Gentle exercises at home, and walking a portion of the way up, or downtown, to, or from the office, are desirable, short of over-fatigue.

Another instance often met with is that of the young woman who is in society and is on the go, day and night, to conform to her social engagements. She dances more than she should in view of her strength, she goes to bed late and lies in bed of a morning where she breakfasts. One, or more cups of tea with cake are taken every afternoon. Late supper is often indulged in when the body is already tired and the nerves exhausted. Constipation is frequent. Under these conditions we soon have dyspeptic symptoms. These proceed from a lowered

¹ Sir Lauder Brunton—Allbutt's System of Medicine, Vol. 3.

acidity and ferments, and the motility of the stomach is lessened through nervous depression.

Here again to have a cure, the habits must be changed. There must be more rest in bed at proper hours, less dancing, less tea drinking, less novel reading, and no late suppers beyond a cup of bouillon and a biscuit or cracker. A glass of good sherry, or port wine, is desirable at dinner, and digestion may be promoted by a simple bitter properly combined before eating. I know of none more valuable in many cases, than the compound tincture of gentian. The bowels should be kept in a soluble condition with a pill of aloes, belladonna and strychnine. In not a few of these young women the monthly flow is very irregular. There is much pain, insufficient flow, or again far too great loss of blood. Between the periods, leucorrhea is considerable and this drain also impairs the health. Anemia is often pronounced.

Country air and iron and arsenic tonics are often required. Massage treatment, wisely given, is very useful. Walking and horseback exercise are curative. Sometimes aromatic spirit of ammonia, Eau des Carmes or essence of Jamaica ginger, are needed to brace the nerves temporarily. One, or two tablets of tincture of strophanthus when feeling faint, or exhausted, are very important to aid a failing cardiac circulation. At bedtime, and between meals, panopepton in dessert, or tablespoonful doses, is eminently useful both as food and stimulant.

In these cases we may later find, if the rules laid down by the physician, are not strictly adhered to, evidences of dilated stomach, weak heart and disturbed vision. Enteroptosis is often pronounced and in extreme cases surgical interference may be advised. As a general tonic the hypophosphites

of lime and soda in solution are very useful. The dose of the solution should be one or two drachms containing 5 or 10 grains of combined salts, taken after food. As the neurasthenic state is benefited, in a similar measure, the local gastric symptoms will soon be ameliorated or disappear completely.

After getting the symptoms from which the patient suffers, and the previous history, we should make a careful physical examination of the stomach and abdomen. Inspection and palpation will frequently tell us several things of much importance. We can recognize by the peristaltic waves and the outlines of the stomach, especially where the abdominal walls are thin and relaxed and the stomach is distended with gas, whether it is dilated. Percussion will substantiate this judgment, as well as palpation. Further, the latter means especially, will enable us to detect and may be outline a distended gall-bladder, or one containing biliary calculi, besides showing local tenderness which points to cholecystitis.

The presence of a pyloric tumor, spasmodic, or organic, may be revealed. The tenderness and resistance from an inflamed appendix may be shown; the dilatation of an enlarged colon may be discovered, and still other facts of importance. If the stomach is filled with gas and some fluid, with evidences of dilatation, fermentation, and obstruction at pylorus, by succussion, or rapid pressure with the fingers, we may bring out marked clapotage readily. Further, we can discover whether there is evident local, or general hyperesthesia, or whether the pain and tenderness accused by the patient appear to be localized and either superficial, or deep seated. Thus we are able to assign what belongs to hysteria, general neurasthenia, nervous gastralgia,—or later

be connected with ulcer, or carcinoma. A displaced kidney, an enlarged sensitive liver, a spleen notably increased in size, may all be revealed and have importance in diagnosis and rational treatment.

Of course, the prognosis varies with existing conditions. In many of these cases, there is evidence of a chronic gastric catarrh which is recognized by excess of mucus, stomach cells, blood, etc., in the vomited matter; also, by the continuance and obstinacy of the symptoms under rational and careful treatment. Frequently, in such instances, and where there are symptoms of fermentation, especially the odor in the eructations of lactic and butyric acids, lavage with a 3 to 5 per cent. solution of bicarbonate of soda, borax, or boric acid, by means of the stomach tube is a very valuable, almost indispensable method of successful treatment. I believe we are much indebted to Dr. Francis Delafield,¹ originally, for having strongly emphasized this practical doing. In order to get good results from the use of the tube it must be passed with skill and intelligence. When employed too frequently, or injudiciously, it causes positive harm. In all cases of prolonged dyspepsia and particularly where the inflammatory state is marked, an examination of the gastric contents after an Ewald, or Boas test meal is imperative.

Especially is this true where we have reason perhaps, to dread the advent of ulcer, or carcinoma. In case of pronounced symptoms pointing to ulcer of the stomach and if there has lately occurred a notable hemorrhage, it is ill advised to pass the stomach tube. While one, or two examinations of

the stomachal contents microscopically, and chemically, may fix the diagnosis of the nature of the dyspeptic trouble, we are not infrequently led into error. In general the early morning is the best time to obtain the stomachal contents for examination,—when the organ has been fasting during the night. The last thing before going to bed may also, be a good time to get the stomachal contents, so that we may compare the results with those obtained from the morning examination.

In functional cases, either simple neuroses of the stomach, or in those stomachal conditions, which are caused reflexly by a diseased organ near by, or far removed, the reports of the examinations are often variable. We may find on one occasion increase of hydrochloric acid, free, or combined, and on another, just the reverse. The same is true, but not to the same degree, of the organic ferments. Again the probability is that the latter often differ in a qualitative way. Much depends no doubt upon the time of day and the condition of the patient when the tube is introduced. Whenever we wish to test the motility of the stomach, it would now seem that the *first part* of the chlorophyl test is more convenient and indeed, quite as accurate as the Leube test meal. The technique of this test is as follows: "The patient, on a fasting stomach, drinks 400 c. c. of water, which has been colored pale green by the addition of twenty drops of a watery chlorophyl solution. At the end of half an hour the residue is aspirated with the stomach tube, and the amount noted."¹ In normal cases the residue should be 50 to 60 c. c.

We should be careful always not to confound the mucus which comes from the

¹ *Trans. Assoc. of Amer. Phys.*, Vol. I, 1886, page 9. Note: Lately, Dr. J. P. Sawyer again strongly recommends the use of Politzer bulb with syphon as an improvement upon the ordinary use of the stomach tube. *N. Y. Med. Jour.*, Nov. 14, 1914.

¹ *Boston Med. and Surg. Jour.*, page 767, Nov. 19, 1914.

esophagus when the tube causes local distress with that which is the product of the gastric mucous membrane. In all dyspeptic disorders we should always consider carefully any disease which precedes, or accompanies them. First, because it enables us often to recognize the probable cause of dyspepsia, and also because it permits us to form a more accurate prognosis and effective treatment. If the examination of the stomachal contents points to the possibility of some organic condition within, or outside the stomach—we should make use of radiography, or fluoroscopy. Here again we may be led into error by the operator, and even though he be skilled in technique and the radiograms obtained are good. The correct translation of what has been discovered is very important. To do this requires an operator who is familiar with the pathological findings within the abdomen, and who for this reason, is able accurately to explain the significance of his pictures. If an operation takes place of course the truth, or falsity of his pictures and their significance, is readily seen.

In those instances where an operation is not considered advisable, we wish also, to know that we have a very good radiographer for the reasons given.

Among the carminatives which I have found most useful in the treatment of various forms of functional dyspepsia—I desire specially to mention the compound tincture of cardamom, the spirit of peppermint, and Kirschwasser. The last owes its power to relieve flatus and quiet nervous irritability locally, to alcohol and a small amount of prussic acid which it contains. Danish cherry cordial is palatable and useful;—also the elixir of fennel and catnip. The latter is particularly desirable for infants. Of all the remedies for an irritable stomach

nothing practically, is superior to the milk of bismuth, given in teaspoonful doses every hour, or two. It may be supplemented now and then, by milk of magnesia or bicarbonate of soda.

As to combined food and stimulant, as I have often found, frequent repeated doses, from a teaspoonful to a tablespoonful, of panopepton for adults, are simply invaluable. To infants, or small children, we may give 5 to 10 drops more, or less frequently with the happiest results. It will often agree with their gastric digestion and restore its integrity, when milk diluted with cereal decoctions, peptonized milk, milk and lime water, albumen water, may fail us.

The use of secretins and pyloro-duodenal extracts, is the newest and possibly one of the valuable additions to the treatment of functional diseases of the stomach. In Dr. H. R. Harrower's address delivered before the Buffalo Academy of Medicine, November 18th, 1914, much will be found of great interest. His book on "Practical Hormone Therapy"¹ should also command wide attention. In writing of the dosage and administration of secretin, Harrower states: "From one to three grains of secretin-bearing extract is a sufficient and active dose. * * * * * It is not harmful, although there are certain contraindications chief among which is functional hyperactivity such as hyperchlorhydria, gastric and duodenal ulcer, etc." (Pages 77 and 78).

It may be used in connection with any other treatment indicated in dyspepsia and may be found a very valuable addition to it. In all instances of obstinate dyspepsia in adults, accompanied, or not, by jaundice, we should be ever mindful of the probability of cholecystitis, or gall-stones, being the effective cause. Similarly, both with young

¹ Bailliere, Tindall & Co., London, 1914.

people and with adults, many stomachal symptoms are caused by chronic appendicitis. In these cases, an operation is occasionally desirable. As a result of it dyspeptic symptoms may disappear.

We should not however, advise an operation, unless we feel satisfied after close observation and the trial of remedies which have proved ineffective, that the appendix, or gall-bladder, causes the dyspepsia. I have known more than one gall-bladder incised and drained, or appendix removed, when combined general and local treatment, rationally used, would surely have made a cure. A little vascular congestion and swelling in either case, was about all that was shown at the operation.

WAYSIDE NOTES.¹

BY

ROBERT T. MORRIS, M. D.

In the later eighties, I had about determined to make my work exclusively surgical. Some of the leading surgeons in New York were asked their opinions of the plan. There was no surgeon in New York at the time who did not add a considerable amount of general medical practice to his work, and I was the first one in New York—perhaps in the whole country, to determine to give up all general practice. Dr. S. told me that he had always considered surgery—exclusively to be an ideal sort of practice, but he did not dare to give up general practice in addition. Dr. McB. said that some of the most interesting part of his work was with families who depended upon him, and he doubted

if any one could devote himself wholly to surgery. Dr. B. said, "That would be very interesting, but you will have to get your bread and butter out of medical practice, taking such surgery as gradually comes your way." Another Dr. B. said, "In my opinion you cannot gain the confidence of people sufficiently to get surgical cases unless you first secure their confidence through successful practice." Dr. P. said, "It would be many years before your time could be filled with surgery. There will be some consultations with men of your own age, and they will ask you to do some surgery, but they cannot have the class of practice that will furnish an income sufficient for your support." Dr. F. said, "I would like to devote myself to surgery, but those of us who are engaged in that work are not fully occupied with it. The work is so divided that we are obliged to take general medical cases." While considering seriously this advice from men who stood first in authority, and gradually finding that my surgery, if properly studied, really filled all the time, particularly if experimental work were done, I became more and more imbued with the idea of the desirability of doing nothing but surgical work. A climax came one night when I had been up until four o'clock in the morning on a parturition case and had a difficult gall-bladder operation to do at nine o'clock in the morning. I did not feel at all fit for the work and did it rather badly and tediously. From that moment the decision was made never to take another medical case of any sort again. This was in the latter part of 1889. How times and customs have changed since then! Not only hundreds, but perhaps thousands, of men are now devoting themselves exclusively to surgery in its different branches, to the exclu-

¹ Advance pages from a book entitled *To-morrow's Topics* to be issued in May by Doubleday Page & Company, New York.

sion of all medical work. As late as 1889 at least, only one man apparently believed that it could be done. Had I cared for the financial part of my work or had there been a family to support it would not have been a safe procedure, but it made very little difference whether my income was one thousand dollars a year, or fifty thousand a year. For that matter I have seldom cared since that time about income in any personal bearing, because I could have as much fun and work upon one thousand dollars per year as upon fifty thousand per year. The desire for large income is a little vanity trick of nature's, which she plays upon us in order to keep us evolving without regard for any discomfort to which we may be subjected in this matter. I have always looked up into nature's face, laughed, and winked one eye at her. She made no response. We understood each other. Sometimes, for days at a time, I would be at work in the Academy of Medicine Library, disregarding practice and being out of the office during office hours. It was my belief—which was correct much of the time—that nobody would come in. That was very wrong. A young man should have a definite office hour, and always manage to be there, particularly during the very earliest days of practice. It is far more important then than in the later days, when people feel they are not sure to live unless they succeed in getting a certain doctor to look after them. In the early days of practice a number of friends in the profession in the smaller communities at a distance from New York would occasionally send for me. Trips requiring an entire day of time for a fee of perhaps twenty-dollars beyond expenses were often taken. Sometimes I did not even get that fee, when cases had been cared for on the ground of

their being interesting and valuable in the way of experience. At times it happened that even small fees were not collectible, and occasionally railway fares and expenses had to be paid out of a pocket that needed to be securely stitched at the bottom in order to prevent a single dime from slipping through.

No one can understand how much of time, pains, mistakes, imagination, distress and money, have gone into the making of any experienced surgeon. Part at least of these things are avoided by men who "drift into surgery" because they have not been enabled to keep up-to-date in the course of the rapid evolution of internal medical practice.

The surgeon must not only learn at the outset of practice if he is really equipped by nature for becoming a surgeon, but he will be obliged to learn by self-analysis the particular sort of surgeon he is likely to become. Is his forte the discovery of basic problems and the formulation of principles? Then research work of philosophic character will engage the latent tenths of his brain capacity. Does his mechanical talent make him the skilled technician by nature? Then skilled technician he will be in the end. Is he an essayist who makes critical analysis of surgical principles, as he notes their application to pathologic findings, and records his observations in the field of applied surgical science and art? Then he will be a publisher of contributions for the benefit of his colleagues. His mind may have scope sufficient in degree for comprehending all of these features of surgery, but time limitation will confine him rather closely to the development of those natural personal talents which belong in some particular field of surgical work. If he has a generalizing type of mind and organizing

ability he may depend upon assistants to work out (under his direction) most of the features of a full surgical training, excepting those of skill and judgment, which are peculiarly personal natures. Is his interest one of pecuniary nature, and desire for fame? Then he will make neither fortune nor fame, for these are incidental to the recognition of his ability on the part of his peers. In the pecuniary interest class we find what might be called a rather unsatisfactory group of men who add surgery to general practice. Their hearts are not so much in the progress of surgery as in the economic progress of themselves. We find some very excellent surgeons in this class, to be sure, because personal interest is a stimulant of primordial origin and no mean degree of power.

A breezy doctor all full of ideas came into the office one day to discuss some of the features of my clinic at the college, and his conversation ran something as follows: "Say, your work is all right, but you ought to see J. P. of Philadelphia. He uses fine silk for ligatures, and it will hold better than your catgut, besides being safer in many ways. His suction drainage is more dependable than the drains which you employ in abdominal work. He is a wonder! He has had more than fifty pyosalpinx operations without a death. When I get back home I am going to do a lot of this work—lots of cases of that sort in my part of the country that are being neglected because no one has taken the trouble as I have to get out and run around to see you men at work. I am going to get a hospital started in our town, because it makes things easier and better for patients and doctors." Some four or five years later I again saw our enterprising friend at a society meeting, and asked him how

he was getting on with his abdominal surgery. He looked surprised for a moment and then said: "Oh, I am in pediatrics." I asked: "How is that? You told me of the inspiration of watching the operations of my Philadelphia friend and you were going to carry his ideas into your work." To this he replied: "Now say, that fellow is a faker, and I am sure of it. Don't you believe for a minute that he had fifty pyosalpinx cases without a death. Why, it just can't be done! Look at all of the adhesions that interfere with doing the work, to say nothing of peritonitis. I tried three cases. In the first one I got into some kind of a bowel before I had hardly begun the operation. The next case turned out to be one of cancer, and you couldn't tell the difference before getting in and doing a lot of damage and no good. Think of having to tell the family! The third case was absolutely inoperable, but I opened the main abscesses and the patient got well in about a year. Whew! No sir! Its pediatrics for me, and I don't take any stock in these reports about fifty pyosalpinx cases without a death. It can't be done unless you select them to make a showing, because a good part of them are inoperable anyway on account of adhesions, and nothing is said in these reports about cancer and ovarian abscesses and appendicitis and things like that turning up, when the signs are all those of pyosalpinx before you begin."

Men may unconsciously deceive themselves in regard to their motives when engaged in general practice including surgery. One of my family-doctor friends who has a first rate natural gift for surgery said on one occasion: "I do not do any surgical work excepting for those who cannot afford to employ experts." At

another time, forgetting his first expression of opinion, he said, "Surgical cases that I get here are about the only ones that bring in any ready cash." These two statements are somewhat conflicting. The man who made the conflicting statements is one of my ideals in the way of a strong, high character with honest conviction. Under no circumstances would he attempt to deceive or to mislead anyone else, yet he was deceiving himself, because the two motives had become inextricably mixed without his conscious knowledge. Although he is a man of strong and competent will, the ties which bind him to his clientele in general practice are such that he has not quite sufficient will for severing these ties and devoting himself exclusively to surgery, which he would do exceedingly well. His generous and gentle ways and delicacy of sensibility have endeared him to so many people that he cannot think of breaking these ties. Under the circumstances he can only do surgery "pretty well." Doing surgery "pretty well" does not suffice when human life and happiness are at stake.

It is a mistake at the present time for men who are engaged in general medical work to attempt to do surgery, unless expert assistance is obtained. Surgeons who are engaged in their special work exclusively never feel that they have reached anything like perfection. Human life and happiness have a very direct connection with the degree of perfection that is acquired by a surgeon. Hardly a week passes that some case does not appear in which I would like to try that case over again just once. Lord! how we would like to "do some cases over again just once!" Hardly a month passes that I do not keep somebody in bed too long because of some

fault in technic or because of shock due to unnecessary time expended at the operation. A more expert operator would have done the work more quickly or efficiently. Sometimes a life is lost, or some permanent defect left which would have been avoided had I known just a little more. Some of my patients are not relieved as they would be had someone else been in charge of their cases. One may divert his attention from surgery for purposes of recreation—that is desirable indeed—but for purposes of mingling thought of medical cases with thought of surgical cases—No!

One of my friends who does occasional surgical work along with general practice is not particularly talented in that line, and never would do really fine surgery even though he were to devote himself wholly to the subject. He has built up a very good general practice because of his first rate general education, and because of a genuine sociability with people whom he holds in high regard. His ideas are almost wholly commercial in tendency and he frankly admits it, and has told me that he ought to have gone into business instead of into a profession. He never treats one of the poor without making him promise to send some patient who can pay, and would split a fee so quickly that one could almost hear the fragments hum. He will not have a great amount of surgery to do, because too many people are familiar with the fact that he is not proficient in that field, but whatever surgery he does obtain will be on a basis of its financial possibilities, without keen regard for the interests of the patient.

On occasions when I have wanted to try a case over again just once more, it may be said that some "physician and sur-

geon" who was engaged in general practice might have done the work better in the first place. That may be quite true, but the principle remains unchanged. We are just at present amongst rapidly changing conditions. Doctors have seen their old line of "profitable illnesses" drop away as a result of preventive medicine. They have not as yet adapted themselves to the idea that preventive medicine, which is saving the double rose,¹ is in that very fact introducing great new questions in diagnosis and therapeutics which will require keener interest, wider knowledge, and more detailed attention than are required for surgical cases, in which judgment and manual technique are the chief desiderata. Doctors do not as yet know what it means to trace a case of neuralgia or of high blood pressure to its protein poison (in cases in which high blood pressure is due to such a cause). They have not planned systematically to hunt out a specific reason for the development of that poison.

During this transition stage doctors have not as yet adapted themselves to the idea of charging by the case, instead of by the visit. How can people know unless we doctors teach them? "Doctor" means "teacher" in direct descent from the derivation of the word. The doctor is not a teacher when he allows people to tell him what they think they want. They think they want some simple surgical operation which will decapitate the demon of all their ills. They think they want to slip a silver dollar into the doctor's pocket to pay for his trouble, and have him pleased and surprised when he finds it there. The doctor is not a teacher when he allows all this. He is not a teacher when he trims his sails

to what the people think they want, and as a result personally profits through his own prudence. Prudence is a sort of universal solvent for hard lumps in rectitude, but the hard lumps are diamonds and rubies.

A doctor who feels very self-sufficient once asked me if I thought he ought to assume the role of general distributor of cases that came to him, sending each one to the best authority instead of keeping it for himself. The reply was that I myself acted in that sort of capacity. In the early days of practice while feeling a way to the best field of action, my work included all kinds of cases. In the field of ophthalmology there were cases of cataract, strabismus, glaucoma, and in fact almost everything in the way of eye work, and my results were pretty satisfactory, but it was evident that one could not comprehend the whole of any field and do thorough work without dropping most of the other subjects and sending these other patients to authorities upon their respective requirements. Consequently my eye work was given up on moral grounds. If one lives in some part of the world in which experts are not available in any special subject, then he has the moral right to do that sort of work himself—otherwise not. In nose and throat work, I devised several procedures that seemed to be ingenious, but other men could take better care of such cases, and they were later sent to these men. I had given much attention to developing orthopedic surgery, through a natural bent that goes with Yankee mechanical instinct; but it seemed best to drop this especial work because specialists who did nothing else could do better for my patients. Genito—"occasional operator" has eight recoveries in ten cases of gastric ulcer, it seem sto him

¹ The double rose is a decadent plant, corresponding to the beautiful asthenic among men.

of the principles of general surgery that it was the last special subject from which I cut away, although some of its operations belonging to general surgery are still enjoyed and accepted. The field of neurology and psychiatry was particularly fascinating to me because of its speculative side and its bearing upon certain phases of pathologic surgery. It had been difficult to give up medical practice, for the reason that every doctor forms a circle of patients who have confidence in him, and who believe that he can do better things for them than anyone else can do. He himself believes that he can do certain things for some of his old patients that no one else in the world could do for them, because he understands them so well. A surgeon must, however, separate his applied work entirely from its medical side provided that he practices in the city, because his time will be absolutely taken up with special work as soon as he has found his position. It is altogether a moral question, on the whole. Anyone who plans to take up a specialty should do all kinds of work at first. Anyone who has the intention of devoting himself to surgery should have an apprenticeship in all specialties at the outset, even though he will do work for his patients that is far from the best at that time. The "occasional operator" seldom has a right to do any surgery, provided that he lives where skilled men are already in the field; but he has the moral right to do this provided that he has a definite intention of working toward the practice of surgery exclusively. Under such circumstances his failures and accidents will be legitimate, and the public which suffers in part is on the whole the gainer from his presence in the end. If an "occasional operator" has eight recoveries in ten cases of gastric ulcer, it seems to

like a result of which he may be proud or even boastful. This is one way of looking at the matter. The other side would be this: The loss of two cases out of ten by an expert operator would be twenty per cent. death-rate, and this would mean such a fearful mortality that it would be a matter of unfavorable comment at the present day in the best professional circles. The saving of eighty per cent. of his gastric ulcer patients by one operator is looked upon as a triumph, and the losing of twenty per cent. by the other would be looked upon as a disaster.

PERIANAL AND PERIRECTAL ABSCESS.¹

BY

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Abscess in the ano-rectal region is due to bacterial infection. Traumatism, ulceration, thrombotic hemorrhoids, tuberculosis, malignancy, pelvic infection and stricture constitute the more commonly enumerated causes.

The anus and rectum are separated by the levator ani muscle or pelvic diaphragm and abscesses in this region are divided into two general classes depending upon their location below or above this diaphragm.

If below this diaphragm an abscess is perianal or ischio-rectal, according to its location underneath the integument about the anus, or in the ischio-rectal fossa and if above it, it is called pelvi-rectal or retro-rectal, according to its location between the

¹Read at the one hundred and first annual meeting of the Vermont State Medical Society, Rutland, Vt., October 8th, 1914.

levator ani and the peritoneum in one of the superior pelvi-rectal spaces on either side of the rectum, or in the posterior pelvi-rectal or retro-rectal space between the rectum and the sacrum.

Another type of rectal abscess is the intramural or submucous. It is located within the bowel above the sphincters and between its mucous and muscular coats.

Perianal abscesses are due to infection through a lesion or an ulceration in the anal canal. When located beneath the superficial fascia they sometimes burrow into the scrotum or the labium major.

When untreated, perianal abscesses usually rupture through the skin or into the anal canal or both, resulting in fistula.

Of much greater importance are abscesses in the ischio-rectal fossa. This form of abscess is due to ulceration or traumatic infection near the ano-rectal junction.

Ischio-rectal abscess is usually seen as an oval bulging tumor near the anus, but if deep seated it may be accurately located only by inserting the index finger in the rectum and palpating it between the finger and thumb.

If left to run its course, the pus follows the line of least resistance, breaking first between the sphincters and later through the skin with resulting circuitous and troublesome fistula.

In neglected cases the infection sometimes spreads to the opposite ischio-rectal fossa, resulting in what is called the horse-shoe fistula.

An abscess in the superior pelvi-rectal or retro-rectal space may result from an ulceration in the rectal wall above the sphincters, from prostatic or seminal vesicle infection, from pelvic infection or from suppurating disease of the coccyx or sacrum, or at the sacro-iliac synchondrosis.

These abscesses are most serious and fortunately quite uncommon. They are best diagnosed by digital examination. If rupture takes place the pus usually burrows between the internal sphincter and the levator ani muscle and escapes between the sphincters although it may break through into the rectum above the sphincters. Again it may also find its way into the ischio-rectal fossa and if not relieved by incision finally rupture through the skin.

Folliculitis with suppuration occurs frequently in the region about the anus but need not be confounded with perianal abscess.

Nearly all perianal and perirectal abscesses are acute in character, excepting when the infection is tubercular.

The symptoms are an indurated swelling accompanied by pain and tenderness and when the ischio-rectal fossa or the deep rectal spaces are involved by the constitutional symptoms of chill fever, headache, etc.

In cases of supralelevator abscesses the symptoms are often obscure and misleading.

The constitutional symptoms offer no clue to the local condition and the pain may be so diffused as to afford no suggestion of the exact location of the trouble. Early examination per rectum and in female patients per vaginam also and a differential blood count should be made. Despite every precaution a diagnosis is often impossible until extensive damage has been done. These deep seated abscesses are sometimes followed by extensive gangrenous sloughing, septic absorption and chronic invalidism.

Tubercular abscesses are subacute or chronic in character and sometimes develop with so little pain or discomfort as to scarcely attract the patient's attention.

All perianal and perirectal abscesses

should be opened early and by free incision.

It is not necessary, neither is it proper to wait for fluctuation, nor adopt palliative measures such as poulticing, etc.

Early and free incision is the only rule. Pus is usually present long before one can detect its physical signs and it is the duty of the attending physician or surgeon to go after it by free incision in order to avoid unnecessary and sure destruction of tissue and the resulting fistulous tracks which otherwise are sure to result.

In fact with early incision and careful after treatment troublesome fistulae sometimes persist and it is wise thus to inform the patient. The method of incision is perhaps unimportant so long as free incision and proper drainage of all pockets is accomplished.

In ischio-rectal abscesses a T shaped or an L shaped incision is usually satisfactory.

In cases of pelvi-rectal abscess a transverse incision three to four inches long is made in front of the anus and carried carefully up to the levator ani muscle which should be freely opened in the same general direction thereby insuring a wound which will readily remain open for drainage.

If the levator is cut in a direction parallel with its fibres the wound will have a tendency to close thereby obstructing drainage.

A retro-rectal abscess should be opened by a similar incision behind the anus and the same precaution observed in opening the levator ani muscle.

The after treatment in any case consists in the use of a very light packing of gauze or a drainage tube only after the first dressing and irrigation with boric acid or normal saline solution.

Ano-rectal fistulae constitute a large proportion, variously estimated at $33\frac{1}{3}$ to 50

per cent. of the proctologic cases coming to our hospitals and clinics for treatment.

When we consider the fact that an ano-rectal fistula is always the result of suppuration, the importance of early diagnosis and proper treatment of every circumscribed infection about the rectum becomes apparent.

In this connection I desire again to call attention to the fact that we should never treat any rectal case without making a thorough examination, despite any opinion of the patient to the contrary and despite any diagnosis he or she may offer in the case.

THE TREATMENT OF SENILE GANGRENE AND THROMBO-ANGIITIS OBLITERANS WITH HOT AIR AND DIATHERMIA.

BY

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It is a common difficulty which we encounter daily, that of identifying senile gangrene from thrombo-angiitis obliterans. These two conditions are not only different from a pathological standpoint, but the prognosis is always so bad in the latter, and with proper treatment so good in the former, that a correct diagnosis is of the greatest importance.

Thrombo-angiitis obliterans is a disease practically confined to the Hebrews of Western Europe, Russia, Galicia, and Hungary; and in rare instances to their descendants in this country. It is most likely an inflammatory process. The victims of this disease are men in the prime of life. I never saw a woman with this

affection, though I have seen hundreds of men thus afflicted.

The frequency of this disease among the Hebrews has made such a strong impression on physicians that a great many are inclined to forget that all Hebrews are liable to suffer from senile gangrene as well. I do not intend to go into the discussion of the differential diagnosis of these two diseases, but I wish to state that the diagnosis of thrombo-angiitis obliterans in an old individual should only be made when there are signs of erythromelalgia or phlebitis migrans.

The distinction is of the greatest importance. The prognosis in the case of thrombo-angiitis obliterans is considerably worse than in the senile gangrene. For a bad case of the former disease, a surgical interference, that of amputation of the leg, might well be done without hesitation; while such action in cases of senile gangrene can in most cases be avoided.

It has been frequently reported that the hot air treatment has been very beneficial in handling the arteriosclerotic form of gangrene. I could report quite a number of these cases—which in the early stages at least are very frequently unrecognized—that even when very severe have been healed without operation.

A case of a physician whose right leg had been amputated for the same reason, was suffering from an ulcer on the fifth toe of the left foot. An operation was performed and the gangrenous toe removed. This operation resulted in a very bad gangrene of the under part of the foot. The granulations were poor, they did not bleed and the sloughing process was progressing. I was called in consultation and advised hot air treatment. It is very important to say that in these cases the toes should not be

put into the baking apparatus. The blood supply in these parts is very poor and for this reason the tissues cannot be cooled properly by the circulating blood. Burns are easily produced, particularly since the pain, which is caused by the baking process, is not so marked as when the toes are kept outside. The treatment was given three times a day for one-half to three-quarters of an hour. The temperature was kept under 250°. The leg was covered to absorb the perspiration. Three months later the wound had healed and the leg was saved.

I could report many similar cases of less severity, but it is sufficient to say that good results can be obtained in nearly every case of senile gangrene, but it should not be tried when marked cyanosis is present.

The results of this treatment, however, in the cases of thrombo-angiitis obliterans are very disappointing. In some cases we see temporary relief, but I cannot remember one case in which the treatment resulted in a permanent or long lasting effect.

The sad consequences of this affection have induced me to try another method on these cases, i. e. the diathermia. I do not intend to explain the theory and technique of this treatment. We know that we can increase the temperature of the tissue between two electrodes of a high frequency machine to any desired degree. There are various instruments on the market, but the most effective ones are those, which are constructed for this particular kind of work. The current they produce has a very high amperage but proportionately low voltage, and the apparatus is far easier to handle than the American made instruments.

For the class of patients that I have mentioned above I use the following method:

The electrodes are placed in two basins

which are partly filled with salt water of about 90°. The water has the double purpose of improving the contact and keeping the electrodes cool. The patient, then sitting in a chair, puts one foot in each basin. The current goes through both extremities and the pelvis. Shortly after the current is turned on, the patient feels a distinct warmth in his ankle regions as the density of the current is the greatest in the narrowest part. Only about five hundred to seven hundred milliamperes can be used and the patient soon complains of an intense ache about the ankles and the strength of the current must be decreased to about three hundred to four hundred milliamperes. Each treatment should last about twenty-five to thirty minutes.

I have used this treatment in more than a dozen cases with the result that three of them have been greatly benefited—one of which is now following his occupation as a traveling salesman. Three improved very much in the beginning, but after a time, while the treatment was still being given, they unaccountably grew worse and eventually disappeared, but when I last saw them, they were not in as bad condition as before taking the treatments. The remaining six cases showed no permanent improvement. The only change noted was that they felt better for a short period immediately after treatments. Each of these cases was suffering with an ulcer on the toe. I had the impression that the treatment had not caused a hyperemia sufficiently strong for a curative effect, but only enough to increase the inflammatory process around the ulcer. It acted like an agent which changes the dry gangrene into a wet gangrene.

Since then I have treated only one patient with an ulcerative process, a gentleman, who

came to my office lately. He had lost his toe nail and there was an ulcer in its place. In spite of my warnings he insisted on taking the treatments, which had helped him a year ago when he took it at my advice in the dispensary. He had taken it at that time irregularly and not in sufficient strength. To my surprise the condition has improved materially but the time is too short to tell whether the improvement will continue.

I have noticed that sometimes during a course of treatment a phlebitis migrans appears. I know that such a phlebitis can develop without a known cause, but I have the impression that the treatment brings it out. It reminds me of a condition which I have often observed when I was treating cases of subacute cellulitis with hot air. Here we often see that a fresh focus develops somewhere in the depths, showing redness, swelling and pain. I wish to say that these inflammations always quickly subside when a wet dressing is applied for one or two days.

It is not impossible that the diathermia treatment plays the same part in the development of phlebitis migrans as the hot air treatment does in the cases of cellulitis.

It is advisable when such a phlebitis develops to stop the treatments for a few days; otherwise the treatment is given regularly three times a week. It is strange that these patients cannot stand a daily treatment. This again seems to support the theory that the thrombo-angiitis obliterans is an inflammatory process.

In consideration of the fact that the hot air treatment is always so successful in cases of senile gangrene I have not used diathermia on these patients except in a case of an old lady of seventy-eight years of age with diabetes. She had an ulcer on

the plantar side of the small toe, and the pain was excruciating. No time was to be lost and I started the diathermia treatment alternating with the hot air treatment, and later I used the diathermia only. The result was excellent. The ulcer healed in about four weeks and did not reappear. The diathermia treatment should likewise not be used when the leg is markedly cyanotic.

The results of the diathermia method in the management of senile gangrene of the leg are very promising. They are better in this disease than in thrombo-angiitis obliterans. Though my experience with this method in the latter cases is limited I thought it advisable to publish my experience, for if it is possible to avoid an operation and save the leg in only ten to twenty per cent. of the cases the diathermia method would constitute a great advance in the progress of handling thrombo-angiitis obliterans.

161 West 86th St.

TONSIL OPERATIONS WITH SPECIAL REFERENCE TO SINGERS.

BY

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The question whether the tonsils should or should not be removed is always under discussion both in and out of the medical profession. Sometimes these discussions are full of heat—heat without much light.

After all, the operative problem is in the last analysis a simple one. The two opposite, wholly enthusiastic and magnificently ardent camps of controversialists representing the extreme conservatists on the

one hand and the extreme radicalists on the other, do not merit any great degree of attention. In this as in most other perplexing matters it is wiser to keep somewhere near the middle of the road. Reduced to its lowest terms the entire question may be set down somewhat as follows:

In a given case, are the tonsils diseased or not? If diseased they must be treated, *if not diseased they must not be maltreated*. The size of the tonsils has little to do with the question, for an insignificantly small tonsil may give more trouble than a large one. If there is simple enlargement without chronic cryptic infection, removal of a portion only may suffice. If the entire gland is chronically diseased, then the entire gland should be removed. Every case is a law unto itself and must be judged on its own merits. Judgment is the most difficult thing in tonsil work so far as the throat specialist is concerned.

In singers, judgment is always at the climax; for a career may be spoiled by an error of opinion or of technique. Moreover, not only the faucial tonsils must be kept in mind, but the vault tonsil (adenoid) and the tongue tonsil (lingual tonsil) as well. Physicians are fairly of one opinion that the tonsils are in reality lymphatic glands with special duties to perform. So far we have found that their chief duty or function is to act as a collecting agency for germs and poisons. Both of these may be brought to the tonsils by the lymph and blood streams, or they may enter the tonsils direct from the mouth surface. Microorganisms and their toxins coming in via the lymph and blood streams migrate chiefly from the air chambers of the nose and from that respiratory cesspool, the naso-pharynx. In every case of tonsil hypertrophy or infection the nose, accessory

sinuses and naso-pharynx should be carefully studied.

If microorganisms migrating to the tonsils were imprisoned there and killed or rendered inert, all would be well, and we could endure transitory discomfort from the symptomatic sore throat attendant upon this conflict. Unfortunately, however, the fighting strength of the tonsils is weak and the battle soon overflows into surrounding territory giving rise to swollen glands in the neck and to remote disturbances such as increased fever, headache or acute rheumatism.

A great deal of maudlin sentiment is being expressed about the "slaughter" of the tonsils. There need be little fear of this unless the unfortunate word becomes applicable to the patient also. So far as we know people may live up to the century mark minus their tonsils. We do *not* know anything about the "internal secretions" of the tonsils, or the vague and altogether mysterious influence which these secretions may exert upon the general bodily health. We may know some day, and it is well to continue our interest and pursue our study of the subject to the remotest boundaries of the field of research; but for present practical purposes common sense is the one thing needful in dealing with the tonsil problem. Of that element no age in medical history seems to have possessed a superabundance.

The influence of tonsils upon the singing voice has been a matter of much controversy. It is also a matter of supreme importance. Books have been written embodying thousands of quotations and sayings from famous people, but like the youth in old Omar's Rubaiyat we can draw no conclusions therefrom, and must "come out of the same door wherein we went."

There seems to be no reasonable doubt that diseased tonsils do affect the singing voice just as other diseases in the respiratory tract affect it. As already mentioned the size of a tonsil has little relation to its pathological significance. Very large tonsils in health may cause no symptoms whatever save the disadvantage due to size; while a tonsil so small that it can scarcely be seen may cause no end of trouble.

I have had under treatment a soprano of large, florid, healthy type who suffered from such severe pains in the right posterior pillar, base of the tongue and right side of the larynx that she was at times unable to fulfil her engagements. Seven different physicians made seven different diagnoses ranging all the way from "catarrh" to spinal tumor. I likewise failed at first to locate the cause, but upon drawing back the anterior pillar with a blunt hook and making pressure against the superior pole of the tonsillar fossa, several beads of foul whitish plugs were forced out. The tonsil in this case seemed no larger than a split pea, but contained three badly diseased crypts, local treatment of which was followed by complete disappearance of the pain which had not returned during the two months following.

The risks in removing tonsils in singers are, of course, much greater than in other persons; hence it is well to study the patient half a dozen times, and see what can be accomplished by local applications. Pressure against the anterior pillar will in many cases force out a plug of foul, stinking secretion. Such a tonsil cannot be regarded as normal. If this condition persists, treatment including operation, if necessary, must be carried out. Personally, I believe a great deal can be accomplished by local treatment; not merely by swabbing

the surface of a tonsil which does little or no good, but by reaming out each crypt separately. A bulbous-end burr-screw is excellent for this purpose, since it can be attached to the dental engine and used in a way similar to the dentist's method of boring out a tooth cavity. Bleeding will be slight, but, of course, only the greatest delicacy should be used, and no pressure should be brought to bear. It is not the intention to burrow a hole in the neck, but merely to clean out the diseased pocket, which varies in depth, but is scarcely ever more than one inch. Local anesthesia should be induced by swabbing on and around the tonsil strong cocaine-adrenalin solution. After all pockets are thus cleaned out, one may irrigate each of them with peroxide solution in a syringe to which a small cannula, like the frontal sinus cannula, is attached. Following this, a long thin flexible applicator is wound with the smallest bit of cotton that will take up an appreciable quantity of fluid. This is dipped in an aqueous solution of silver nitrate, 40 to 80 per cent. and introduced to the bottom of each crypt.

With such a method no case of simple acute tonsilitis should last more than 48 hours. The treatments need not be carried out oftener than every 12 hours, and five treatments are at the most, entirely sufficient.

As already outlined, any proposed operative attack in singers should be weighed and studied with diligence. Prof. Chiari of Vienna has shown this to be of importance in the simple enlargement cases without disease of the crypts. Here the anterior and posterior pillars are held apart by the round projecting mass of the tonsil. Consequently when this mass is removed in toto there is a relaxation of the palato-

pharyngeus and palatoglossus muscles, which affects the movements of the larynx and influences tone production unfavorably. In such cases it is much better to slice off the projecting portion of the tonsil flush with the pillars. The fact that the patient may get an attack of tonsilitis in the stumps left behind is no argument against this procedure, since this can be treated after the manner outlined above and may not again recur.

In every case of tonsilitis as mentioned above we should study the nasal chambers thoroughly to see if there is any latent infection, acute or chronic, to account for the drainage into the tonsils. An X-ray picture of the sinuses from anterior and lateral views should be taken if any doubt exists as to their condition.

Whatever the technique of tonsillectomy, and whoever the operator may be, the one great fear is hemorrhage. The best surgeon is sure to meet with this accident if he operates a great deal. It is simply a question of "probability and chance," but as time goes on and a perfected procedure comes to the skilled surgeon's hands, hemorrhage occurs with decreasing frequency. There is no doubt that bungling is responsible for not a few cases. Personally, I can remember my own early experiences with tonsillectomy, and in retrospect I feel certain that where hemorrhage of alarming extent occurred (this happened in two cases which recovered) I had been uncertain of the line of cleavage between the tonsil and its bed. Undoubtedly the bed, anterior or posterior pillar, or superior constrictor muscle had been damaged. At that time I was using sharp dissection with the sharpest possible instruments—a method which is questionable even in the hands of experts.

Local anesthesia is certainly preferable

in adults for many reasons. Children under twelve require a general anesthetic as a rule. An important thing is to draw the tonsil as far out of its bed as possible without gagging the patient. Great care must be taken with the anesthesia and hemostasis. If the patient has pain, or if the field is obscured by blood, a successful operation is impossible. Novocain is much in favor for anesthesia. I now use cocaine, one-half of one per cent. aqueous solution with five drops of adrenalin (1-1,000) to every two drams. Ordinarily not more than four drams are required to inject both tonsils, although as much as an ounce could be used in most cases with impunity.

Another principle is to free the tonsil absolutely from its attachments without carrying with it any demonstrable muscular fibres from these attachments. This means that the line of cleavage must be followed with almost mathematical precision whatever knives or scissors are used for the purpose.

Where adhesions are present from old peritonsillar inflammations, the index finger is an excellent guide for the scissors. Any considerable amount of irregular scar tissue which deforms the symmetrical outline of the fauces is likely to affect the voice unfavorably. The fossae should fill in uniformly with granulation tissue. This sometimes leads the inexperienced examiner who sees the case at a subsequent period to assert that some of the tonsil was left behind. We should all beware of this mistake, and of attempting another operation "to take out what was left."

It scarcely seems necessary to go into the technique in such detail, for every good operator has his own method which may differ radically from that here set down.

But one fact is certain, viz.: That all successful operators reduce pain and hemorrhage to a minimum.

In conclusion let me say that in following out the ideas set down above about twenty-five singers have been tonsillectomized. There has been no pain and there has been no post-operative hemorrhage. The singing voice has been improved in quality or heightened in range. Where this has not occurred there has at least been no harmful result, no necessity of learning "to place the voice all over again." In other cases conservative work has been done wherever indicated instead of the radical procedure. No normal tonsil has been removed in toto. If enlarged it has been sliced off somewhat after the old-fashioned method.

Tonsillectomy is a radical operation. It is neither "simple" nor "easy," and in many cases tries the skill of the operator to the utmost. It is an excellent operation, but *not in all cases*.

Conclusions.—In concluding, the following may be given as the cardinal principles of tonsil operations:

1. Make a careful diagnosis. Search especially for latent infections of the nose, accessory sinuses and naso-pharynx.
2. Study out what is best for the individual case. There is a choice of three methods: Local applications of drugs, conservative operation (tonsillotomy) or radical operation (tonsillectomy).
3. Induce complete anesthesia and good hemostasis. Local anesthesia is best for adults; general anesthesia (ether) for children.
4. Follow the line of cleavage if removing a tonsil completely.
5. Do not overtreat the patient after operation.

No. 14 Central Park West.

ACUTE PERICARDITIS.¹

BY

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This patient, A. K., is aged seventeen years, male, white, single. His father died of typhoid fever at the age of forty-five, mother perished from pneumonia at about the same age. Three brothers and two sisters living and in good health. Patient had convulsions during infancy, later typhoid fever, diphtheria, pneumonia, several attacks of rheumatism; has been operated upon for nasal polypi. He states that about February 1st, 1914, he first noted that his knees began to swell and become painful, and that later the elbows, shoulders, wrists and fingers also became implicated. He admits have contracted Neisserian urethrorrhea two or three months ago, and a slight urethral discharge is still present.

On admission to the hospital physical examination of the chest revealed nothing abnormal except an increase in the area of cardiac dulness, the heart being displaced downward and to the left, and a pronounced friction sound was noted. Urinalysis showed the urine practically normal, no casts and no albumen being present. When admitted February 4th, 1914, his temperature was 101.4° F., pulse 108, respiration 40, and the joints already mentioned were swollen and painful. He says pain was first noted in the left ankle, then both knees, the shoulders, elbows, wrists and fingers. A provisional diagnosis of acute articular rheumatism with pericardial effusion was made, and the customary anti-rheumatic treatment instituted, viz., large and frequently repeated doses of salicylate and bicarbonate of soda, with thorough purgation.

The facts are of some significance that on admission this patient could only keep himself comfortable in bed by maintaining a semi-recumbent posture, and that he complained of pain in the cardiac region. The anti-rheumatic treatment was continued, his temperature ranging about 102° F., pulse 90 to 98, respiration 40 to 50; intestinal

and renal functions normal. His temperature to-day is 102° F., pulse 100, respiration 45.

In brief this patient entered the hospital with polyarticular rheumatism, one joint after another having become involved, the disorder being accompanied by the usual clinical phenomena. In acute articular rheumatism one may always expect elevation of temperature, sweating and other so-called classical signs of joint inflammation, e. g., pain, heat, redness, swelling and loss of function. Under anti-rheumatic treatment the patient says he has improved. At the time of admission there was noted considerable disturbance of respiration, and questioning elicited the fact that discomfort was increased when he assumed other than a semi-recumbent posture. There was marked pain in the cardiac region accompanied by "shortness of breath." He now says he feels more comfortable when in the upright posture than before treatment was commenced. He still suffers some pain in the left shoulder, and there is considerable limitation in the range of motion. The condition of the other joints has markedly improved.

Examination of the head and neck reveals nothing of importance. Inspection of the chest shows a rapid type of breathing. Upon palpation impingement of the cardiac apex upon the chest wall can be detected, but there is no fremitus which sometimes occurs in cases of this character. Percussion demonstrates a considerable increase in the area of cardiac dulness chiefly to the right of the apex, i. e., the increase in dulness is greater to the right of the normal point of apex impingement. One can readily understand why this would necessarily be true in the presence of pericardial effusion with inflammatory exudate. Normally the heart swings from above downward and toward the left within the pericardium. Any exudate within the pericardium tends to collect in the most dependent portion, following the law of gravitation, and there would naturally be an increase in cardiac dulness as is present in this case.

In practicing auscultation to determine the condition of the intra-thoracic organs, it is unwise to depend entirely upon instrumental findings. While every scientific physician should thoroughly understand the use of all instruments of precision, it is also

¹ Clinical lecture delivered before the senior class of the University of Louisville, Medical Department, at the Louisville City Hospital.

advisable that he keep the natural senses well trained. Unlike instruments the normal senses cannot be forgotten and left at home, they are always available whenever it is necessary to make a physical examination. Moreover, the delicate instruments of precision oftentimes appear to exaggerate, and considerable practice in their use is necessary to enable one to correctly interpret the findings thereby obtained. It is a wise plan to keep the ear trained and in all physical examinations of the chest both natural and instrumental methods should be utilized. In certain instances when some particular sound cannot be positively differentiated with the ear, instruments of precision are of inestimable value. It is dangerous, however, in doubtful cases to depend entirely upon the instrumental findings and both methods should be used before arriving at a final decision.

Preliminary examination of the patient before us was made three or four days ago, at which time auscultation demonstrated a decided to-and-from friction sound over the cardiac area which seemed to be strictly superficial in character. More careful auscultation to-day reveals the same friction sound which is intensified by having the patient lean forward thus causing the heart to further impinge upon the anterior chest wall. The sound is not transmitted in any definite direction, but is distinctly heard over the cardiac area. It is less prominent now than when the patient was first examined. The murmur is so superficial that it could hardly be endocardial in origin, and based upon the findings already outlined we have no hesitancy whatever in making the diagnosis of pericarditis as a concomitant of acute articular rheumatism.

Before considering the differential diagnosis and treatment a few words may be permissible with further reference to the etiology of pericarditis. In this case might it not be due to systemic invasion by the diplococci of Neisser? While of course this is possible, the hypothesis seems more likely that it is a part of the general rheumatic process. In about seventy per cent. of cases pericarditis is directly traceable to rheumatism. According to the history this pa-

tient has had several rheumatic attacks, therefore it seems certain that the streptococcus rheumaticus is the determining etiological factor.

Pericarditis may be caused by other diseases either by conveyance of microorganisms through the blood stream to the pericardium, or by contiguity of structure from inflammatory lesions in adjacent organs. In this case infection did not reach the pericardium by contiguity of structure, as there is no other inflammatory lesion within the chest. In rare instances pericarditis may be produced by the infliction of severe external violence to the chest wall. It is sometimes the result of such diseases as cancer, pneumonia, tuberculosis, Bright's disease, etc. There is always a question, however, whether implication of the pericardium owes its origin to these disorders, or whether the so-called "wandering organisms" are responsible.

In the differential diagnosis of pericarditis, pleurisy and endocarditis must be excluded. There should be little difficulty in excluding pleurisy if one remember the physical signs are in a different situation and are more widely distributed than in pericarditis. Furthermore, with the body in a perfectly rigid position if respiration be discontinued for a moment, there being then no movement of the pleurae, the friction sounds entirely disappear. Differentiation between endocarditis and pericarditis is more difficult, and there are several features to be considered. The main points of differentiation are: As a rule the pericardial friction murmur is double, the so-called to-and-fro sound. Of course a similar murmur might occur in endocarditis, but it is exceedingly uncommon. A pericardial murmur sustains no definite relationship to the cardiac cycle as does an endocardial mur-

mur. Moreover, an endocardial murmur is heard with greatest distinctness in a certain definite area and decreases as the ear leaves that area. Its maximum intensity bears an intimate relationship to the cardiac cycle,—systolic or diastolic. In the case before us the murmur does not bear any such definite relationship to the cardiac cycle, it is heard continuously, it impresses the ear as being superficial, not having that "far away" sound of a murmur produced by an endocardial or valvular lesion. The sound is increased when the patient bends forward, causing the heart to impinge upon the chest wall. Slight external pressure causes the patient to evince some tenderness.

In this case there is a beginning pericardial effusion, the layers of the pericardium are separated by the collection of fluid in the more dependent portion. The presence of a great amount of fluid would entirely abolish the friction sounds and produce characteristic symptoms from pressure upon the surrounding structures. It would force the lung upward and backward, it would cause marked disturbance in respiration and greatly enlarge the area of cardiac dulness on percussion which would gradually increase as the pericardial sac filled. However, that part of the subject will not be further discussed. This is at present a serofibrinous type of pericarditis, and there is a beginning effusion.

Prophylaxis is of the greatest importance in the treatment of pericarditis. There are no specifics, and the best one can do is to be well trained in recognition of the diseases which may produce pericardial inflammation and do everything possible to forestall this complication. As pericarditis most frequently accompanies rheumatism, it is the duty of the physician to institute such treatment

as will eliminate the acute rheumatic phenomena as quickly as possible. Pneumonia and rheumatism are the two diseases most frequently accompanied by pericarditis, and endocarditis, therefore the primary indications are to combat the infection by keeping the system well filled with fluid to dilute the poisonous products, and to administer the proper remedies to insure free elimination. After pericarditis has developed the treatment is largely symptomatic, the first indication being to relieve the pain which is sometimes so intense as to be almost anginal in character. In the accomplishment of this the position of the patient is important, the semi-recumbent posture affording the greatest comfort. Local applications are beneficial in the majority of instances, the best method being the ice-pack. However, if the physical condition of the patient is such that the application of cold would be inadvisable, the hot water bag and electricity may be advantageously employed. A persistent dry cough is sometimes an annoying symptom, and while there is nothing to be expectorated the cough must be relieved. The most valuable remedies for this purpose are the sulphate and phosphate of codeine one-quarter grain every four hours as required; and hydrochloride of heroin one-twelfth grain will oftentimes insure the patient several hours' rest at night. Every time the patient coughs the chest is disturbed and the result is harmful, therefore it is of the utmost importance that coughing be prevented as far as possible. One cannot be too assiduous in attention to the gastro-intestinal tract in the treatment of pericarditis. The patient should be permitted to ingest nothing which might be provocative of gastric disturbance, or produce an inordinate amount of gas within the stomach. The upward pressure of a dis-

tended stomach impinging upon the cardiac area will markedly increase the discomfort. The diet should therefore be carefully regulated, and the bowels kept continuously open. The amount of fluid ingested should be reasonably restricted, the diet should consist of plain easily digestible food, a small quantity being allowed at a time, the *prima viae* should be kept well cleansed by enemas, glycerine suppositories, the administration of small frequently repeated doses of calomel followed by salines and other suitable agents.

As to direct medication, it must be confessed that there is no specific treatment of pericarditis. To be most effective treatment should be commenced while the disorder is still in the dry stage (*pericarditis sicca*), i. e., before marked effusion has occurred, thus inhibiting the inflammatory process. In following the ancient rule of administering large frequently repeated doses of the salicylates well diluted with water, gastric disturbances are almost certain to occur. To avoid this it is an admirable plan to give with each dose of salicylate twenty to thirty grains of bicarbonate of soda which will prevent transformation of the salicylate into salicylic acid in the stomach. Bicarbonate of soda preserves the salicylate intact until it reaches the intestinal tract thus preventing gastric disturbances. Bicarbonate of potassium in fifteen to twenty grain doses every four hours is sometimes beneficial.

To prevent pericardial effusion diaphoretics, diuretics and cathartics have hitherto been most highly recommended. However, the faith of the profession has been somewhat shaken in regard to the effect of these remedies, and in so far as the direct removal of pericardial effusion is concerned, that is no longer believed possible. On the

other hand, in the treatment of pericarditis, it cannot be reasonably said that diuretics and cathartics should be discarded. In selected cases such agents undoubtedly exert some influence in the removal of pericardial fluid. By reducing the quantity of fluid in the diet of the patient as already suggested, by the administration of drugs to keep the bowels well open, e. g., calomel followed by salines in hot water, or one-half ounce sulphate of magnesium in hot water every 4 hours, thus inducing free purgation and relieving the gastro-intestinal stasis, a large amount of the body fluids will be eliminated. If the kidneys are normal the administration of theocin, diuretin and preparations of that character will extract a considerable quantity of water from the blood; and the blood thus deprived of water, in circulation through other portions of the body, will absorb water to replace that which has been withdrawn. In certain cases, therefore, it is believed the prolonged administration of cathartics and diuretics has a legitimate field of usefulness in the treatment of pericardial effusion. If these remedies do not prove efficacious and the effusion continues to increase, it might be asked what else can be accomplished and what are the dangers to the patient? Effusion in the pericardium, like effusions elsewhere, may become dangerous from two standpoints and in two ways. First, stagnant material of this character always constitutes a suitable culture medium for the proliferation of "wandering organisms," and when it becomes infected a purulent pericarditis ensues. The second danger is mechanical asphyxiation of the patient. The greatly distended pericardium so seriously interferes with pulmonary function that proper oxygenation of the blood becomes impossible; it interferes with normal cardiac

movement, the heart being literally "smothered" in the sac of water cannot force the requisite volume of blood through the systemic circulation. These dangers are entitled to serious consideration, and prompt relief must be secured. The patient may become markedly cyanotic, oxygenation of the blood having already become inadequate the circulation is in consequence greatly disturbed, and something must be done; that something, of course, is removal of the fluid from the pericardium. When other measures have failed, paracentesis may be practiced. The method by which this may be best accomplished will not be discussed at this time, as the case before us has not advanced to that stage.

**ON THE DIRECT GALVANIZATION
AND FARADIZATION OF THE
BRONCHI AND THEIR TOPI-
CAL MEDICINAL TREAT-
MENT IN BRONCHIAL
ASTHMA.¹**

BY

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In this paper the term bronchial asthma is used to designate that well-known chronic condition which is characterized by paroxysms, occurring mostly at night, followed by intervals of complete or almost complete euphoria—a condition representing an idiopathic disease and not merely a symptom. To understand its true nature we should avoid one-sided views. We should not say, as has been maintained by some in an exaggerated manner, that asthma is nothing but a reflex neurosis originatnig in

the nose or an intoxication derived from the digestive tract; nor should we consider it as a purely neurotic disorder. The field of asthma is much larger. Undoubtedly, pathological processes in the nose, in the alimentary tract, in the female genital organs, etc., not seldom act as the exciting cause of the asthmatic state; but what is the condition existing at the real seat of asthma—in the bronchi? What are the pathological findings seen *in vivo*?

To these questions the bronchoscope gives a partial answer. In other respects we have still to rely upon theories. My attempt to present a new theory will, I hope, not subject me to the accusation of being one sided. Since we are now able to inspect the bronchi directly, just as we have done with the larynx for the past fifty years, the bronchi have been carefully studied, and we owe it to Novotny of Cracow and Ephraim of Breslau that our knowledge is so much more extensive today than it was even a few years ago.

What, then, do we see endoscopically in the bronchi and their ramifications?

In consequence of the swelling of the mucosa, the bifurcation is often so little marked that we pass by it with the bronchoscope, without being aware of it. This swelling of the bronchial mucosa is frequently so pronounced that it protrudes into the lumen of the bronchoscope, and one may be in doubt as to whether one is in the bronchus or in the esophagus. In the bronchioli, this is still more decided, and often exists to such an extent that the aperture of a small bronchiolus is not larger than the head of a pin. Most likely the affection begins with an hyperemia and consecutive swelling, which latter may gradually become very marked—even to the extent of being approximately ten

¹ Read by invitation March 8, 1915, before the Williamsburg Med. Society.

times the normal thickness. This is due, partly, not only to an edematous condition but also to an infiltration involving the superficial as well as the deep layers of the mucosa.

While in normal respiration the bronchoscopic image represents a beautiful picture of closing and opening of the tubes, in advanced cases one cannot see the difference between inspiration and expiration; the rhythmical contraction and relaxation of the bronchial tubes have entirely disappeared in some instances. (It should be mentioned that the writer has never used general anesthesia in any of these cases). In other cases the rhythmic motions are very clearly visible.

The spastic contractions of the bronchial muscles can be observed during an acute attack, and it is interesting to see how this condition subsides after applying a few drops of cocain and adrenalin. These contractions occasionally simulate a stricture, which occurs in rare cases, but cocain plus adrenalin clears up the diagnosis.

I have seen ulcerations of the mucous membranes a few times, but am convinced that they occur much more frequently than is supposed.

What produces these pathological findings? What is the innermost cause of all these conditions, the symptoms of which have been familiar to us for many a century?

In considering these questions which I have put to myself year in and year out, I have finally come to a comparison of the condition with laryngismus stridulus in children. As you are no doubt aware in infancy and childhood, the upper air passages are very susceptible to certain irritations, while in grown persons this susceptibility disappears and is succeeded by

one of different character in the lower air passages. Many years ago, the spasmodic asthma of the adult was compared with the laryngismus stridulus of children, and finally I myself came to the same conclusion. As is well known, the laryngismus stridulus is produced by secretion running down from the nose and nasopharynx. This occurs during the night when the children are in deep sleep. To explain this phenomenon, it is not necessary to assume that the secretion must completely obstruct respiration; that seems to occur but seldom, if ever. Small masses of secretion touching the epiglottis or other structures at the entrance of the larynx should suffice to produce a spasm of the glottis. Such spasms occur from similar irritations in other parts of the infant's body (disturbance of the digestive tract, etc.). That a spasm of the glottis may be produced in the adult, we all know from the very rare cases in which a slight irritation of the epiglottis causes such a condition. Generally, however, the larynx of the adult is much more tolerant to insults, so that the phlegm running down may excite a cough, but very rarely gives rise to the condition known as laryngismus stridulus. Since, however, an abnormal secretion from the nose and its adnexa is much more frequent in adults than in infants, it is justifiable to ask: What becomes of it? Many persons consult a physician complaining of a dripping into the throat as soon as they lie down. This is certainly not an hysterical symptom, but a fact. As soon as such individuals assume the prone position, the nasal secretions drop down into the pharynx or even into the larynx, and waken them. In others, it gets into the esophagus and into the stomach. In a third class, however, it passes through

the rima glottidis into the trachea, and from there into the lower portions of the air tract. That secretions, and even crusts, find their way from the nose into the trachea, has been noticed by every one who has seen a large number of patients, especially those suffering from rhinitis sicca with formation of crusts. This is an absolute fact.

If, then, these dry masses can gain access to the trachea, how much easier is it for the fluid secretions to do so? Once there, there is nothing to prevent them from flowing by their own gravity into the deeper parts where, however, we have not as yet been able to follow their course.

How intense an irritant is necessary to produce a spasm of the bronchi and their ramifications, it is impossible to state. Perhaps the mechanism is analogous to that of the spasm of the glottis, so that an irritation from the trachea causes, reflexly, contractions of the bronchial muscles in the lower portions. On the other hand, there is a possibility that the irritant acts only in a cumulative way, i. e., larger quantities have to be collected before an attack is produced. This may occur in a single night; perhaps only after several nights. Once a condition of irritation is established, the visible pathological conditions must of necessity follow, and a vicious circle, together with a picture of chronic asthma, is presented. In such cases nothing is accomplished by treating peripheral areas. The physician must endeavor to restore the mucosa to its normal condition, that is, to treat it in the same way as we have treated the larynx for the past half century—by direct applications.

Before dealing with that point, however, it may be permitted me to direct attention to some other features which are of etiologi-

cal importance. While in the beginning of the writer's career, all asthmatic conditions were attributed to changes in the nose, some medical men have now come to the contrary opinion, and reject all the results ever obtained by any laryngologist in that direction. That also is an error. Even today the initial procedure is to examine the upper air passages and to remove *marked* abnormalities, as polypi, pronounced deviations of the septum, etc. With these measures one will be able to cure a few asthmatic patients, but not many. The large majority already have lesions in the bronchi which require special treatment.

The same holds good of a second class of patients, namely, those showing disturbances in the digestive tract. Only recently a book appeared by James Adams of London, in which he tried to prove that asthma is solely due to an intoxication from the intestinal tract. "Asthma," says Adams, "has fallen between two stools, on one of which sits the general practitioner without the special knowledge and skill necessary to examine and treat the nose, throat, and bronchi; and on the other of which sits the specialist with his attention concentrated on those regions, but neglecting the general condition of the patient and the dietetic and hygienic errors which have led up to the asthmatic state."

Although one cannot altogether deny that there is some truth in this statement, I could hardly suppress a smile on first reading it, since Adams, in referring to my experiments, found fault with me for ordering the asthmatic patient to come to the office for treatment before having any breakfast; fortunately now-a-days we have so far advanced that we can treat such patients even on a full stomach. But although I have never denied the existence of a so-called

"dyspeptic asthma"¹ it seems to me that Adams himself has fallen between two stools by explaining everything on the basis of his one theory. Assuredly some cases, with, or without, eczema or urticaria are caused by dyspeptic conditions, just as in other cases rheumatism is the causative factor. All these patients are influenced beneficially by treatment along these lines which must, however, be supplemented by local applications in most instances before a permanent cure is effected.

Returning to the question of treatment, it may be mentioned that Ephraim, by

Breslau. This method is much simpler for the patient and much more convenient for the physician. Any one can learn it, who has done even a little laryngological work. For the introduction of the spray tube Ephraim used this metallic canula and in the beginning I did the same, but I soon encountered some difficulty in taking it apart; so that I tried another instrument which was recommended to me by Dr. Elemer von Tövolgyi. He wrote to me in answer to inquiry that any one could make his instrument with a small wire. That was done (see Fig. I), but even with this simpler in-

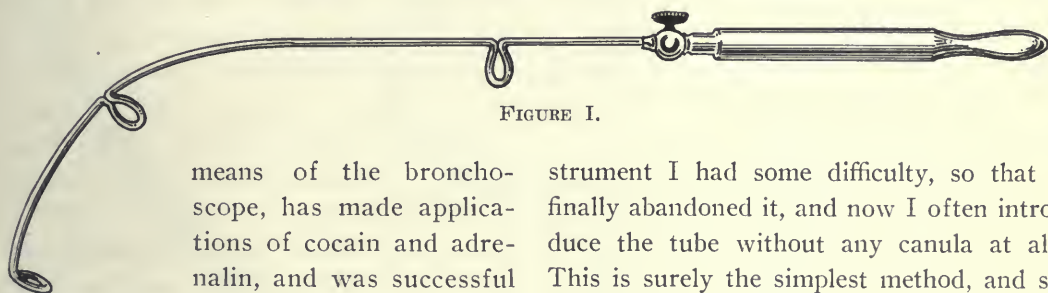


FIGURE I.

means of the bronchoscope, has made applications of cocain and adrenalin, and was successful in a number of cases. Others have followed his example.² The writer, too, began these experiments in 1910.³

After treating a number of cases in the way indicated it was noticed that a considerable number proved unamenable to the treatment, and that the frequent introduction of the bronchoscope did not exert a beneficial influence on the mucosa. It was therefore a great pleasure when early in 1913 Ephraim demonstrated his new flexible bronchial spray to me when I was in

strument I had some difficulty, so that I finally abandoned it, and now I often introduce the tube without any canula at all. This is surely the simplest method, and so far I have succeeded with it in the majority of cases.

Very soon it was noticed that by the application of cocain and epinephrin alone the mucosa could not be reduced in size. The temporary enlargement of the lumen of the bronchi by the use of these remedies has a very beneficial effect, since it permits of secretions being easily expectorated, and this may be sufficient to afford relief. In this way some cures have been obtained—even by the writer himself—but in the more chronic cases this method was not effective. Under these circumstances I experimented with other remedies, such as astringents of various types (chloride of zinc, extract of hamamelis, etc.), all of which have been tried by me. A remedy which is agreeable to all patients is oleum menthae pip. One thing is certain, that many remedies will

¹ Only recently K. K. Koessler of Chicago described (*Ill. Med. Jour.*, January, 1913) three cases in which asthma occurred every time after these patients had eaten hen-eggs.

² In this country, George K. Keiper of Lafayette, Ind., and Large of Cleveland, have recently contributed some observations but unfortunately they have reported so few cases that no conclusions can be drawn from them.

³ W. Freudenthal *N. Y. Med. Jour.*, June 24, 1911; *Jour. A. M. A.*, September 21, 1912.

produce the same result in this condition, provided they are used in the proper manner.

After treating a number of patients in the manner indicated, it was observed that a considerable number of them did not respond to the treatment. A *hypersensibility* of the bronchial mucosa was still in evidence, which apparently was not influenced at all by the former applications. If we consider a spasm of the muscles as the main factor during an attack of asthma, it is reasonable to believe that an *atony* of the bronchial muscles sets in after the attack is over. Then a vicious circle is formed. The atony reduces the ability of the mucosa to absorb and expel secretions, etc. Thus the fluid may and does stagnate and again produces an attack.

Acting upon this theory, I asked myself how the atony and hypersensibility could best be overcome; and reached the conclusion that the direct application of the galvanic current, i. e., endobronchially, should prove of value. Consequently, I had a flexible electrode made, very much after the style of Ephraim's flexible tube for the injection of cocaine and adrenalin, and began my experiments. Everything went much easier than was expected. Naturally, the technic is somewhat more complicated than the simple application of the spray, for we first have to resort to the latter in order to anesthetize the parts and then introduce the electrode. I overcame this difficulty by having a metallic wire put through the spray by means of which an electric current can be transmitted. Thus both instruments were combined into one.

Of course the introduction of any instrument is not always an easy task in this class of patients, and it is always well to be on guard lest something unpleasant may hap-

pen. This, only apropos. The tube (see Fig. II), once *in situ*, is connected with the negative pole at f. while a large plate electrode (A), connected with the positive pole is placed outside around the chest, or one side only, and the current turned on. An objection might be raised to such a method of treatment on the ground that too severe an irritation might be produced by the pressure of the metallic endpiece of the electrode (b), against some point of the bronchial mucosa and that even an erosion might occur. This, however, is not at all likely, for two reasons: First, the electrode is not left at any one spot longer than probably half a minute. When it is in the bronchus, the electrode is slowly pushed down and then just as slowly withdrawn, unless the patient suddenly reacts. Thus, an injury is not at all probable. But nature herself has provided a safeguard which enables this procedure to be carried out with less risk of injury. The bronchi in these cases are not empty air tubes, as they should be, but are largely filled with secretions which are more or less watery, and if this should not be the case, they surely become filled after the introduction of the electrode, for the masses expelled during the removal of the tube and immediately afterward are sometimes enormous. Now, this fluid acts as a conductor, and spreads the current all over the mucosa, thus in turn preventing a burning or other untoward effect from the current. If the patient has a coughing spell, or starts to vomit, or stops breathing from sheer nervousness treatment has to be interrupted at once. It may be resumed in a few minutes, or postponed for a day or two, according to the condition of the patient.

The writer's procedure is as follows: At the patient's first visit a thorough broncho-

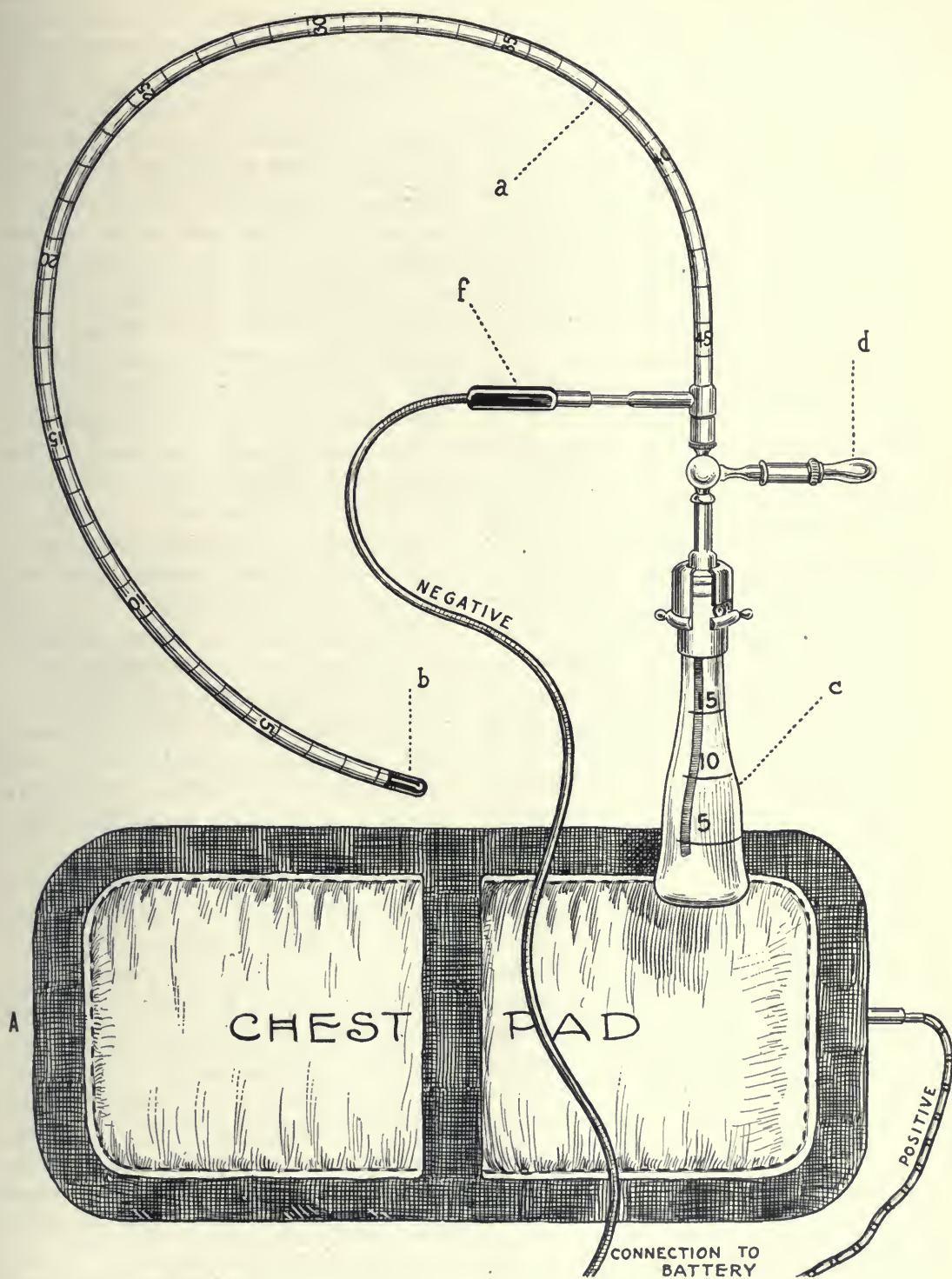


FIGURE II. The author's bronchial spray and electrode combined.

scopic examination is made to obtain a general knowledge of the condition. This examination is not always successful on account of the timidity of these patients.

The direct treatment is now taken up. The larynx and the upper portion of the trachea having been cocainized, the flexible tube provided with the electrode is introduced. Then the spray attachment is connected with the air pump at d, or a simple rubber bulb and a portion of the fluid is sprayed in. (The writer generally starts with a solution of cocain, [1 per cent.], to which adrenalin and a few drops of oil of peppermint may be added. Later, other medicaments are used). At the same time, the electric current is turned on. In a short time the tube is slowly pushed down beyond the bifurcation as far as it will go. Then, after about three minutes, it is withdrawn and introduced into the bronchus on the opposite side in the same manner as before. It must be remembered that the instrument is in the trachea when the distance from the teeth is about 20 cm., and that it has passed the bifurcation when it is 26 to 28 cm. beyond the teeth, in the adult.

What now is the effect of such electric applications?

The effect of the *direct faradization* seems to be an increase in the secretion from the bronchi, but it also seems that the peculiar tenaciousness of the secretion so characteristic of asthma is perceptibly lessened. This is similar to the temporary result often obtained by iodide of potassium.

By *direct galvanization*, the secretion from the mucosa is diminished. This is noticeable about one or two hours after the application. Both currents exert a beneficial influence on the absorbent power of the mucosa, in other words, direct faradi-

zation as well as direct galvanization, by augmenting this prevents the occurrence of the atony referred to before.

The current has been applied for six minutes at one sitting, but it is certain that the time could be extended to eight or ten minutes, or even more. The same holds good as regards the strength of the galvanic current, which has been used up to eight milliamperes. Undoubtedly it could be increased to fifteen or twenty milliamperes. Of late, the writer has employed both currents together. There are naturally many variations possible in the application of the current as well as in the use of the drugs to be applied topically. The question uppermost in our minds, however, at the present time is: What has been achieved by this endobronchial treatment with electric currents and with drugs?

The writer would not answer this question on the basis of cases as that would be misleading, since we have to deal not with a finished condition, but with experiments which are only in the initial stage. He would rather ask the members of his audience to investigate the matter for themselves.

One point must be mentioned, i. e., the considerable number of ambulatory patients that absented themselves from treatment as soon as they felt a little better. It cannot therefore be stated whether or not these patients have been permanently cured. On the other hand, there are some cases which reacted so remarkably after an illness of many years that the permanently good result can be ascribed only to the treatment employed. Permit me to mention here but three cases, two of which show a striking similarity.

Case I. T. F., a banker, 50 years of age, had been treated by the writer twenty years

ago for nasal polypi and asthma. The former were removed, but the asthma remained in *statu quo*. He had gone the rounds from one physician to another, with occasional periods of improvement, but was a constant sufferer from asthma most of the time. For a year or more he had not attended to his business, and was referred to me again by a colleague for endobronchial treatment. This was commenced at once. As soon as the current was turned on, and the electrode was *in situ*, the patient said that he felt that something was working in his thorax; and he experienced relief for the next three days. Applications were made twice a week, with the result that the patient felt perfectly well and could sleep all night after a treatment lasting for ten weeks, and has remained so up to the time of the last report, the beneficial effect having continued for more than a year.

Case II. L. K., was a dispensary patient whom curious enough, the writer had also treated twenty years ago for nasal polypi and asthma. The polypi recurred frequently, so that he was a constant visitor at the New York clinics for years. He had not been able to work for the past five years. When unable to sleep at night, he had taken, and, as he said, upon the advice of a physician, a big dose of whiskey. This prescription was naturally interdicted, and it is reasonable to assume that the order was obeyed. He was treated in the same manner already indicated, and the result of a treatment extending over more than four months is excellent. The man has been completely cured of his asthma and is able to work again as before.

Case III. Mrs. I. N., aged 43, mother of six healthy children, had been a sufferer from asthma for the past six years. She complained of pain in the chest and back, constipation, hemorrhoids, etc. Slight deviation of the septum and marked post-nasal catarrh were present. The writer began to treat the latter, at the same time, making endobronchial applications. Instructions in regard to constipation were given. No result after four weeks. Then an operation for removal of the hemorrhoids, which had been recommended long before, was performed; and the patient was not seen until after the lapse of three months. The

asthma was then just as bad as before, and the same treatment was again instituted. As early as six weeks later she felt comparatively well during the day; and then slowly improvement was experienced during the night, so that finally she also could be discharged as cured.

These cases—to which quite a number of similar ones could be added—represent that class of asthmatics which should not be called neurasthenics. Of course, they were nervous, but that was only secondary; they became so solely because of their asthma. In other cases, however, neurasthenia is the primary condition, and the asthma only a symptom. As a trauma has so frequently been found to be a cause of this type of neurasthenia, it must be considered of etiological importance. A few examples may suffice here.

Case IV. Dr. E. S., an excellent physician with a large practice, fractured his arm four weeks before an attack of asthma set in, which persisted for two days. Then attacks came on every morning at three o'clock, lasting for several hours. This condition remained for several months. His nose was then operated upon, and he experienced relief of the asthma for four weeks. The attacks then grew worse, and a laryngologist from out of town referred him to me. When the method of treatment was explained, the patient replied immediately that he had a marked idiosyncrasy toward cocain, and did not believe he could stand the treatment. A few drops of a very weak solution of cocain were sprayed into the larynx, and he at once commenced to gag and vomit. Nothing would relieve him, not even the explanation that cocain could not have produced so immediate an effect and in such a minute dose. (He had been operated upon before under local anesthesia). He continued to gag and vomit until finally he had to be sent home. Later on he was treated again, but never to the satisfaction of the writer. Finally, the psycho-analytic treatment which he received in the course of my conversations with him affected the mind of this intelligent patient in such a manner that he im-

proved greatly, and one day exclaimed that he was perfectly well and "eternally" grateful for the cure.

Case V. G. J., a civil engineer, 32 years of age, consulted the writer upon the advice of his physician, on account of asthma, but at the same time explained that he knew very well that no one could ever cure this disease. A spur was removed from his nose, but his condition grew worse. He was then treated for six weeks endo-bronchially, with but slight improvement, and disappeared for a year and a half. On his return, when I asked him how his asthma was, he replied: "Asthma? How did you come to think of that? I did not know that I ever had asthma." It should be mentioned that this gentleman had impressed the writer as an honorable and truthful person. Whether he had really forgotten his asthma or not, cannot be said. At any rate, it was gone, and with it his neurasthenia.

Case VI. J. W. F., a machinist, aged 29, had been operated upon three years previously for double hernia and became dyspneic immediately afterward. Then asthma developed. He was treated at the Roosevelt Hospital for 21 days, where he received daily injections of adrenalin with no improvement.

Then he went to the Jewish Hospital in Brooklyn, where he remained for two weeks, and was given the same treatment with the same negative results. Next he went to California, where he learned to make these injections himself. When he called on me, upon his return, he said that his asthma had been so bad there that at times he injected (every three hours) 20 drops of adrenalin; besides, he used—and was still using—a cocain spray for his nose. Owing to this double intoxication of cocain and adrenalin the patient became so weakened that nothing could be expected from ambulatory treatment, so he was referred to a hospital and nothing further was heard of him.

Among the many cases of asthma treated by the writer during the last few years, a large number of most interesting character have been seen which cannot be reported here. One thing, however, is clear,

that genuine neurathenics comprise but a small percentage of these patients. By far the majority show pathological conditions at the real site of bronchial asthma, that is, in the bronchi and bronchioli; by direct application of various remedies and the use of electricity as the writer has seen in a large number of instances, an extraordinarily beneficial and frequently curative effect can be obtained.

1003 Madison Avenue.

THE CRENATION OF RED CELLS AND ITS SIGNIFICANCE.

BY

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Ever since physicians have observed blood under the microscope I think it may be said that they have noticed the punctate form that some of the cells assume, especially after standing a short time.

Many years ago when a red cell was punctated all around its edges and in its center, it so much resembled a strawberry or mulberry that the name "mulberry cell" was given it, or, on account of their notched appearance they were later, called "crenated cells."

These crenations seldom if ever appear on a leucocyte, but this condition is important in the erythrocytes, both large and small.

I do not know whether it has occurred to others, as it has to me in regard to a cause for these crenations—why do they always appear round? Why not square, or angular, or some other shape? It is easily noticed that where blood is quickly placed on a glass slide, and a cover glass superimposed

that the cells do not always crenate when drying, they sometimes all run together, and form a conglomerate mass. When this occurs it is generally due to weak cell walls or a break so that the cell contents run out.

It has been known for a long time that crenated red cells in an individual mean a low state of vitality, but, in order to determine whether there are crenations in a person's blood it should be drawn fresh

case of tuberculosis, and found some of these crenated red cells in the blood, their proportion would indicate the state of vitality in that patient. In my experience, however, this seldom occurs in tuberculous cases. The patient seems to get weaker and weaker without crenation of the red cells, but the cells become flabby, dropsical and more or less coalesce—especially does this appear in the last stages, but in neurotic and alcoholic cases these crenations are

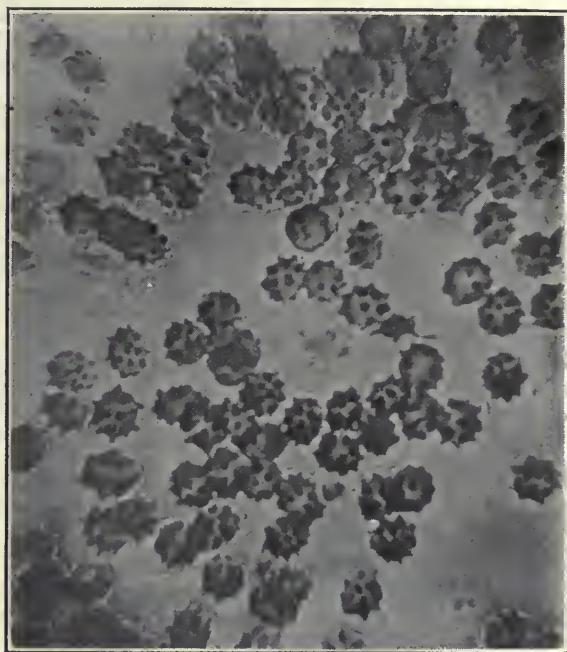


FIGURE I. Crenated blood cells.

and examined in a very few seconds. It is preferable, too, that the slide should be warm, or at least the temperature of the body. If the red cells or erythrocytes are then found to be crenated it certainly indicates a low state of vitality, or that something is not right. If the blood were stained this could not so readily be determined—in fact, such an examination would not be reliable.

If one were examining a patient, say a

very marked and distinct. This would seem to point to the nervous system as a prominent feature associated with crenated red cells in the system. No doubt the nervous force gives out first in all of these cases, while in tuberculosis it's the lungs and thus lack of oxygen.

I would like to impress upon the hematologist that he must be very careful to get his blood specimen very quickly under the microscope, without any admixture of

air between the cover glass and slide, before he determines whether there are present crenations or not. I have seen many mistakes made by a lack of attention to this detail.

But to go back to the cause of the crenating, and this I was unable to explain until I investigated the microzymian theory.

As you may know, the microzymes are the smallest physiological elements in the system—they being round and averaging 1-50,000 of an inch in diameter. They are, therefore, smaller than a red cell, or even a germ, and are known to enter into their composition.

These punctate points in a crenated red cell are the outline of the microzymes therein contained. As the blood cell degenerates or goes to decay, these red corpuscles resolve themselves into the original elements from which we all came—"Out of dust art thou made, and unto dust thou shalt return," for the dust of the air contains microzymes, all of which are indestructible. As the countryman said of a long winded speaker in town meeting, "He says what he has to say and his tongue runs on." So these microzymes "live on."

If one cares to take the trouble to isolate them from the erythrocytes one of the ways he can do so is to treat the blood with one of the strong acids, dissolving the cell wall and then follow up by dissolving the albuminous covering of the microzymes therein contained and they will show up in their "naked" condition. The "Migraf" or photo-micrograph here reproduced shows the crenated erythrocytes very distinctly. The specimen of blood is from a case of epithelioma of the face shortly before the man died. This photograph does not represent an average field of the drop of blood taken, but only a special picked out spot of

the 200 fields available from a drop of blood visible with a 1-12 objective.

When these crenations are "en mass" among a lot of normal cells they are not so easily differentiated and it is here that the experienced hematologist comes into service.

The Value of Tuberculin.—Raw vouchsafes the opinion (*Liverpool Med. Chir. Jour.*, July, 1914), after treating over a thousand patients with injections of tuberculin, that it is a remedy of the greatest value, especially in early cases and where the deposit of tubercle is localized, as in one apex or in a lymph gland or single joint; but where the tuberculosis is disseminated and complicated by secondary infections, the use of tuberculin cannot be expected to be of much avail. It ought, however, to be tried in every case with the hope of some relief or possible benefit, as we cannot allow the patient to suffer and die without making every effort to arrest the progress of the disease.

Tuberculin is not going to revolutionize the treatment of tuberculosis. It is a valuable aid to the other methods of treatment, hence it must be used with care and discrimination and with a full knowledge of its dosage and therapeutic effects.

The Business Side of Practice.—The business side of medical practice has been written about, iterated and reiterated, till it has become a chestnut. Suggestions as to how you can make a business or financial success in the practice have been given till they are a bore. Some doctors are so "afear'd" that they will lose a customer if they ask for pay that they haven't the nerve to demand their money. There can be no objections in politely and firmly asking for prompt settlement for services. The long credit business should be abandoned. No other business allows it. The habit of allowing bills to run six months, or a year, without settlement, is foolish. A customer is more apt to pay while the service is gratefully remembered and is recent.—*Med. Summary*,

THE ANNOTATOR

The Sexual Significance of Clothing Fashions.

Ever since Freud infected the medical world, some of the most susceptible have been imagining they saw improper sexual significance in all sorts of things. The last to receive serious attention are the recent styles in feminine fashions which are all accused of being a frank stimulus to pas-



sion. This would be funny were it not pathetic. The love of ornament is ingrained in our very natures and goes back as far as we have any knowledge of our ancestors. The invariable purpose was to make ourselves more attractive to the person we love. We see it in the lower animals, and it crops out at puberty in boys in a virulent form. Girls seem to be born with it, bless their hearts. The married woman who ceases to make herself attractive to her husband by all those little innocent tricks which have become an instinct, had better blow her brains out at once, as she is a recruit for "The Grand Army of the Neglected." A man prefers poker at the club, to a complaining frump at home. Of course there's a little flurry at the size of the bills of dressmakers and milliners but it's all forgotten when he sees the unconscious flattery in the envious eyes of men who seem to wonder how such an ugly ass could capture such a beautiful and brilliant wife—though as a fact, unadorned she may be far from beautiful. What's the difference, though, if he does not know it? She is happy and so is he—and the happier everybody is the less they will need a doctor of body, mind or soul. We believe in style. It's an aid to public health and morality. Of course, we wouldn't advise the total abandonment of skirts, but even that would not be suggestive were it the custom as with the Chinese. "Honi soit qui mal y pense." The world is

full of people who think the only modest styles were those worn by their mothers, but if we look into it a bit, we will find that their mothers were condemned for immodesty in departing from the styles of their grandmothers. Of course, we are referring, not to the extreme, but to the generally adopted styles that signify nothing more than the normal, wholesome instinct to be admired. The only people who don't want to be admired for their persons or deeds, are found in the jails and asylums. They say that when a man begins to prate of pretty girls, he's becoming senile but if that's so the whole male world must be as old as Methuselah.

The Street Safety Campaign.

This is a movement that should receive the hearty cooperation of everyone. Doctors



are particularly interested as they are on the streets a large part of their time. Traffic congestion has been increasing for many years, and would now be worse than a nuisance were it not for the greater speed of most of the vehicles. A block quickly disentangles itself under a little guidance. But this is dangerous to pedestrians and must be regulated in their interests. A committee has been appointed by the Mayor, and it has established relations with other associations having allied purposes. We hope they can agree upon safe rules which will permit physicians to reach their patients without undue delay. The automobile has greatly extended the area of one's practice. Formerly our patients were largely within walking distance, but now we can reach them in equal time only by speeding to the law's limit. This is such a revolution that it requires a revolution in traffic rules. Some cities have found it

necessary to have a large number of one-way streets and it does seem that such a rule could be made of much more use in New York City than it has been. Street accidents, though still far too numerous, are really very few when we think of the enormous traffic and the crowds of people. It speaks eloquently of the care taken by drivers and policemen, but, as we have frequently remarked, there is room for improvement. The ambulance service is represented in the new campaign and we hope that physicians in private practice will also make some reasonable suggestions. They know more about it than any other class of educated men and ought to be heard.

The Bad Work of Tired Brains.—Business houses should have learned by this time that long hours of mental labor are unprofitable. Clerks accomplish less in ten hours



than they do in eight, because the output is poorer in quality. Some of it has to be done over again and the errors may be very expensive. Of course, intermittent muscular work re-

quiring no great effort and little attention may be carried on safely and efficiently twelve hours or more, but the greater the strains the less the endurance. No human being can endure a prize fight of a half hour very often. We are tempted to make these remarks because there are still some business houses which require more hours of mental labor per day than is good for the interests of the clerks and themselves. If original work is required of a brain, it is exhausted in a remarkably short time. Many an author can write but two or three hours a day, and some are "played out" after 1,500 words or less. Great managers are often considered lazy, and seem to waste their time, but their work may be accomplished in the relaxation of the barber's chair. The hours of labor therefore depend entirely upon its character. The more mental concentration demanded the shorter must be the time. If the workman overdoes the matter, such as in typesetting, he invariably breaks down with nervous exhaustion and must "lay off" or go on "the tramp." Perhaps, if employers and

employees could have their attention called to this, it would be possible to diminish the number of the unemployable unemployed. In some lines two employees, each working a half day, are better than one working all day. Let this be kept in mind in our efforts to find work for the idle.

Child Mentality and the Teaching of Grammar.

Grammar is such a simple science that it is well within the grasp of children of twelve, but it has been made so complicated in the last few decades that the text-books are more or less puzzling for adults. We must blame our pedagogs for this deplorable change. It seems that there is not enough



attention being paid to the mental limitations of children, and the authors use long words whose meanings are obscure. This is the excuse for allowing such a non-medical subject to appear in a strictly medical journal. Schools are gradually correcting such errors as trying to teach advanced arithmetic several years before the mind is sufficiently developed to understand it, but there is still room for improvement even here. In grammar the conditions are simply atrocious. What should be a comprehensible pleasurable study is too often hated because the child hasn't the slightest idea of what it is all about. Precious time is wasted and the pupil discouraged. Teachers ought to remember that grammar is a recent science—only a few centuries old. It had no place of course in ancient schools, where the pupils used language properly by imitation as they should yet. The great value of the kindergarten and lower grades is the opportunity to hear correct speech, and only many years later can the child be taught why certain forms are right and others wrong. We strongly urge that in the grade schools all the big text-books be replaced by small ones dealing with the fundamentals in plain, simple language. All the finer points should be postponed until the high school is reached. Our pedagogs are making wonderful advances in the art of teaching, but in the matter of grammar there is a big field for reform.

MODERN REMEDIES



Conducted under the editorial supervision of Dr. John W. Wainwright.

Radium in Gynecology.—F. Jayle, (*Presse Médicale*, July 22), (*New York Medical*, 1914), describes five cases of malignant growths of the uterus or ovaries, in all of which good health has been maintained from three to five and a half years since radical operation and local radium treatment. In two the operations had been incomplete, some malignant tissue remaining. Jayle advocates the use of radium as a supplementary measure in certain malignant gynecological cases. In some cases of cancer of the cervix, especially with marked extension to the vagina, radium may be applied with advantage both before and after the operation. In a case without vaginal extension, in which hysterectomy was performed, radium was successfully used to destroy a large suppurating cancerous iliac lymph node. Local induration following the use of radium in strong doses is due, not to recurrence, but to a sclerosing action, and disappears in time.

Pituitrin and Rupture of the Uterus.—(*Monatschr. f. Geburtsh. u. Gynak.*, 1914, xxxix, 553, *Everke*), (*Surgery, Gynecology and Obstetrics.*) The patient was a V-para whose previous deliveries had been normal. When the os was dilated to the size of a five mark piece the contractions became weak and 0.75 gr. pituitrin was given subcutaneously. Strong contractions followed and after two hours there was sudden collapse and severe pain in the abdomen. The woman was brought to the hospital moribund. Version was performed and the child which lay in the abdominal cavity was extracted. Laparotomy showed that the uterus was completely ruptured. Suturing and tamponing were hastily done but death ensued. The pelvis showed marked general contraction. The child was

full term. In the earlier deliveries the fetuses must have been very small. The pituitrin caused the rupture because of the disproportion between the size of the head and that of the pelvis.

Effect of Mallebrein on Inflammation of the Upper Respiratory Passages.—

D. U. Mansfield, (*Roussky Vrach*, June 7, 1914), extols the effect on inflamed mucous membranes of the upper respiratory passages of mallebrein, which is a twenty-five per cent. solution of aluminum chloride, originated by Doctor Mallebrein, of Karlsruhe. The action is attributed to the chlorine given off when the drug comes in contact with the mucous membrane. Mallebrein may be used as a gargle, twenty to twenty-five drops to three tablespoonfuls of water; by inhalation, fifteen drops to three tablespoonfuls of water, and by local application. In cases of nasopharyngeal catarrh, tonsillitis, and other acute infections of the upper respiratory passages the results seemed to be superior to those obtained from any other treatment.

The Treatment of Proctitis.—W. Jüngerich, (*Zentralbl. f. d. ges. Chir. u. i. Grenzgeb.*), discusses the modern treatment of proctitis. Instead of the moist treatment with disinfecting and astringent substances, he now uses a dry insufflation of powder, and has treated several cases successfully with acetonal suppositories. This preparation contains 2 per cent. aluminum acetate, as an active disinfectant and astringent, and 10 per cent. acetone-chloroform-salicylic ester. The treatment further consists of regulating the stools through diet; sitz baths in the evening; small en-

emata of oil, morning and evening, and then application of the suppository. This has the advantage over the moist treatment that it can be carried out by the patient himself without his work being interrupted.

Camphor in Respiratory Affections.—

L. Cheinisse, (*Semaine Médicale*, May 13, 1914), reviewing experiences of various observers with camphor in pulmonary tuberculosis and pneumonia, states that in the former condition injection of camphorated oil is tonic to the heart, excites motor activity, including that of the stomach, and appetite. Taken by mouth, camphor activates perspiration (Adamkiewicz), used subcutaneously, it tends to reduce night-sweats. In simple bronchitis, camphor liquefies the bronchial secretions; in tuberculosis, progress of the disease is less acute. In 20 per cent. of Weilbrauch's 246 tuberculous cases, camphor injections diminished or removed fever. In pneumonia, while not unreservedly accepting the conclusion of Heard and Brooks that camphor is not a heart stimulant, one may assume from recent experimental work, that the clinical benefit noted is due rather to a direct action of the drug on the pneumococcus than to cardiac stimulation.

Magnesium Treatment of Tetanus.—

Stromeyer, (*Münchener Medizinische Wochenschrift*, July 14, 1914), (*New York Medical*), reports five cases treated in this manner. The magnesium, after a previous lumbar puncture, was injected into the subdural space in the form of a fifteen per cent. solution, eight c.c. being the dose. The result as regards the mortality was not very good, four of the five patients dying; two of the cases, however, being complicated with a severe pneumonia when treatment was begun. In two of the cases, prolonged anesthesia was obtained. In one of these two cases developed a bedsore such as is seen in trophoneurotic disturbances. The other died before a bedsore could develop, so that there is a probable relation between the production of anesthesia and the formation of bedsores. The beneficial effects which followed the injections in all

cases were that the patient was able to sleep; there was a cessation of cramps; the muscular tone was improved; the reflex irritability was diminished, and there was a slowing of the respiration. No harmful effects on the respiration were noticed.

Arthigon.—Rohr, (*Dermatologische Wochenschrift*, September 5, 1914) (*New York Medical*), reported 133 cases of gonorrheal diseases treated with arthigon, a gonococcic vaccine. He considers it a specific remedy, but efficient only in exclusively gonorrheal foci of disease. He obtained great benefit in epididymitis, arthritis, and prostatitis; prostatic abscesses were absorbed in a very short time. As good results may be obtained in anterior urethritis from local treatment, the use of arthigon is not recommended in these cases. The intravenous injection of arthigon has certain advantages over the intramuscular, and is to be preferred; both measures are harmless. Visual disturbances were observed in one case treated with an intravenous injection of arthigon, but they disappeared spontaneously after four days. The absence of febrile and of local reaction, and the cure of obstinate cases, may be ascribed to biological differences in the stocks of gonococci from which the arthigon is prepared and in the patients affected. An onset of epididymitis, more rarely of prostatitis, was observed in some cases immediately after an injection of arthigon for posterior urethritis. This he ascribes to a flaring up of the gonorrhea in the posterior urethra and its extension to the neighboring organs, and considers it a warning that arthigon should not be employed in such cases, especially as the therapeutic effect produced is very slight.

Salvarsan in Nonsyphilitic Diseases.—

W. H. Best concludes: (*Journal of the American Medical Association*, August 1, 1914), 1. Salvarsan is specific in diseases caused by any variety of spirillum. 2. It has curative properties in those diseases in which the infecting organisms are found in the blood or lymph, or in other locations where they can be easily reached. 3. It

has great therapeutic value in those diseases in which arsenic has been successfully used. 4. Used with caution in repeated doses over a long period, it has a therapeutic value in those diseases in which arsenic previously gave indifferent results. 5. Used as an adjuvant to some other drug or drugs, it is useful in those diseases in which a decided and quick tonic, stimulating, and alterative effect is desired, depending on other drug or drugs for the ultimate result. 6. The mode of administration is important, and should be as follows: Intravenous in those diseases in which a specific action is desired; full dose intramuscular injections, repeated once or twice at long intervals (eight weeks), in those cases in which the tonic, stimulating, and alterative effect is desired, as well as a certain specific action; small repeated doses (every week or ten days) intramuscularly, over a long period, in those chronic diseases in which a purely tonic, stimulating, and alterative effect is desired. The diseases treated by the author include cases of chancroid, chyluria, elephantiasis, epithelioma, erythema multiforme, leprosy, lupus vulgaris, pityriasis rubra, trichinosis and tuberculosis.

Tooth Powder.

Joseph Head, M. D., D. D. S., in an article on Prevention of Mouth Infection in the *United States Naval Medical Bulletin* for July, 1914, gives the following formula: Magnesium peroxide

200 mesh sieve	60 parts
Soda perborate	30 parts
Castile soap white powder	10 parts
Oil mentha pip.	1 part

Mix, keep in widemouth glass-stoppered bottle in dry place.

Ten grains of above is said to develop in an acid mouth 120 to 130 minims of a 1 per cent. peroxide solution. It is not only antiseptic but germicidal.

The Action of Pituitary Extract.—

Pituitary extract makes uterine contractions more frequent, powerful and prolonged. It may obviate the necessity of forceps.

GENERAL TOPICS

Diet for Those Past Forty.—Dr. Charles F. Bolduan, director of the bureau of public health education of the Department of Health of New York City considers that whilst overindulgence in proteids (meat, eggs, fish) is common to all ages, especially in America, those of us who are over forty are especially prone; and this fact tends to increase markedly the death rate for the years after two score. Overindulgence in meat especially is largely responsible for the fact that people in that life era are dying off faster than was the case thirty years ago.

The popular belief that it is wise to consume less meat in summer might well extend to all seasons. Proteids specialize in building up and rebuilding the body; fats, starches and sugars are more useful in the production of work and heat. Normally one needs, to repair and replace worn out tissues, three ounces of dry proteid. On the other hand elimination must be maintained; and this is done largely by the kidneys. That is why overeating and overdrinking are apt to break down those most important organs.

What then would be a correct diet? In terms of calories (heat units) the human body has been found to need 3,000 calories, derived from all kinds of food, a day. Thus a day's meal should be about as follows:

Breakfast—Oat meal to the amount of a good sized helping; a glass of milk and a little more with the oatmeal; sugar for the oatmeal and two slices of bread and butter. Here we have 1,000 calories already, which is all that can be allowed for breakfast. If coffee is substituted for milk it is necessary to subtract 300 calories and then make it up by eating another slice of bread, although coffee has no place in this diet.

Luncheon—Toast, milk and fruit to the quantity of 500 calories.

Dinner—Meat, three vegetables with gravy, but only one helping; two slices of bread and butter, one helping of prunes and tea with milk and sugar. This gives 1,500 calories, which makes 3,000 total for the day.

With this a satisfying amount of water should be drunk at meals; and copiously between meals.

Deprecates Tendency to Operate.—"There is far too great a tendency to operate nowadays, and the average doctor resorts to this shorter route, when perhaps a more careful diagnosis would show some other course to be preferable. Many operators—and I use the word advisedly—rush into operations with no clear idea whatever of the true nature of the disease which they are endeavoring to combat, and for this reason many operations are needlessly performed."—Dr. John M. T. Finney.

Sugar as a Hand Cleanser.—Dr. D. H. Stewart (*Med. Council*) says: "The most careful antiseptic toilet may be brought to naught by the preliminary use of soap; therefore clean your hands with granulated sugar and also dress wounds with it if you have nothing better." His experience since 1895 has shown that "with sugar and water, followed by chloride of lime and water, the physician's hands may be rendered sterile." This has been confirmed by laboratory tests. "Granulated sugar is gritty, takes the place of both soap and brush, does the work better, and leaves the skin unscratched, soft and smooth."—*Mass. Med. Jour.*, Dec., 1914.

How to Remove Stains.—The *Nursing Times* gives the following useful and practical hints:

Iodine—This can easily be removed by soaking it in cold water, then covering the stained part with a little powdered starch moistened with water. Spread the paste on the stain, leave it until dry and then wash in the usual way.

Medicine, such as an iron tonic—Pour a stream of boiling water over the stain, then with a bone spoon apply a little salts of lemon, rubbing it gently with the back of the spoon; pour on more boiling water and the iron stain will have disappeared. Dip the part of material from which the stain has been removed in a little water (about a cupful) containing half a teaspoonful of dissolved carbonate of soda. This is to neutralize the acid, thus rendering the effect of it quite harmless to the fabric.

Any specially difficult stain due to very strong medicine or coloring matter, which can not be taken out by the simple, quick means, can always be removed with permanganate of potash and well diluted sulphuric acid. *To use these*—Put a little permanganate of potash solution in a glass and a weak solution of sulphuric acid in another one, and then place the stained article in the permanganate of potash and leave it a few minutes, and this will dissolve the stain; then remove the discoloration by putting it into the weak sulphuric acid solution. and, if necessary, repeat the process until the mark is gone.

Wine stain—While wet place a paste of powdered starch (starch and cold water mixed together) on it and leave for some time (an hour or two); then rub off and the mark will have nearly gone. Finish by washing and boiling, or if preferred, use lemon juice and common salt. Moisten the stain with the juice, apply some salt and rub with a bone spoon, using more juice if necessary; then wash in the usual way. If these simple methods fail, a weak solution of chloride of lime is always quickly successful. It can be bought in liquid form at the oil shop. Use it in the proportion of a teaspoonful to half pint of cold water. As an antidote to this strong alkali, rinse the material very thoroughly in cold water. Never use chloride of lime for colored articles, or silk, as it turns white silk bright yellow, which discoloration can never be removed.

Wet ink stains—Rub with a piece of ripe tomato and then rinse well in cold water; wash and boil, or put a little red ink on the mark and

wash; the acid dissolves the iron in the ink and sets free the tannin or coloring matter, which will boil out.

Tea, coffee or cocoa—Borax is best. Pour boiling water through the stain while it is wet, if possible; place some powdered borax on and pour on more water; then wash, boil and dry in the sunshine. Sunshine seldom fails in removing such stains as tea, coffee or scorch marks.

Bloodstains—These should be soaked in salt and water for some hours; then wring out and rub in a fresh supply of salt and water. Next wash in the ordinary way, with soap and warm water; boil, rinse and dry in sunshine.

The Seventh Pan-American Congress will meet in San Francisco, June 17th-21st inclusive. It assembles pursuant to invitation of the President of the United States issued in accordance with an act of Congress approved March 3, 1915.

The countries and colonies embraced in the Congress are the Argentine Republic, Bolivia, Brazil, Canada, Colombia, Cuba, Chile, Costa Rica, El Salvador, Ecuador, Guatamala, Honduras, Haiti, Hawaii, Mexico, Martinique, Nicaragua, Panama, Paraguay, Peru, Santo Domingo, United States, Uruguay, Venezuela, British Guiana, Dutch Guiana, French Guiana, Jamaica, Barbadoes, St. Thomas and St. Vincent. The organization of the Congress is perfected in these countries and the majority of them have signified their intention to be represented.

The Congress will meet in seven sections, viz.: (1) Medicine; (2) Surgery; (3) Obstetrics and Gynecology; (4) Anatomy, Physiology, Pathology and Bacteriology; (5) Tropical Medicine and General Sanitation; (6) Laryngology, Rhinology and Otology; (7) Medical Literature.

All members of the organized medical profession of the constituent countries are eligible and are invited to become members. The membership fee is \$5.00 and entitles the holder to a complete set of the transactions. Advance registrations are solicited and should be sent with membership fee to the Treasurer, Dr. Henry P. Newman, Timken Building, San Diego, California.

The general railroad rate of one fare for the round trip, good for three months, made on account of the Panama-Pacific Exposition at San Francisco.

The Palace Hotel will be headquarters.

The First Pan-American Medical Congress was most successfully held in the United States in 1893. Five intervening Congresses have been held in Latin American countries. It now devolves upon the medical profession of the United States to make this, the seventh, the most successful in the series.

CHARLES A. L. REED, President, Union Central Building, Cincinnati.

HARRY M. SHERMAN, Chairman Committee of Arrangements, 350 Post St., San Francisco.

RAMON GUITERAS, Secretary General, 80 Madison Avenue, New York City.

PHILIP MILLS JONES, Special Committee on Hotels, 135 Stockton St., San Francisco.

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The status of radium treatment ought to be improved, before it sinks into the deplorable dogmatism which ruled in the early days of electrotherapy. We must not forget that during a half century or more, the primary and secondary currents of low voltage were used in myriads of forms for all sorts of conditions with so little effect that not a few physicians have condemned electricity in all its forms as useless. This extreme position is of course regretted by those who still find much use for the high frequency current, yet even they are exceedingly conservative and limit their practice to diseases in which they are reasonably certain they have obtained benefit. If a case improves or recovers under electrical treatment it is not absolutely certain that electricity did it. The current may indeed have retarded recovery due to other means or by the ordinary recuperative power of the tissue themselves. There is precious little really scientific knowledge of the functional and material tissue changes caused by electricity or any of the ether radiations induced by it, excepting of course the necroses due to excessive amounts. Mysticism ruled our early and unscientific practice which was not even empirical. The lay mind grasped at it, as at all other things which appeal to our credulous side. Many of us still remember the days when we all thought that elec-

tricity must do good somehow, and when a household was not considered complete unless it had a battery of some kind for the ailing inmates. Enormous sums of money were wasted on the nonsense, except where benefit was obtained as a result of its suggestive influence. We are now not a little astonished and ashamed of the way we acted without the slightest foundation in observed fact. There were few research laboratories then, and they were managed by practitioners too busy to look into matters deeply. We jumped into electrotherapy in the same way we took up the ridiculous sun baths. When we heard that plants utilized the energy of sunshine to break up carbonic oxide, we concluded that light was life-giving, but we have since learned that light is very often irritating or lethal according to its intensity and that the living tissue of plants is always shaded or in complete darkness as in the roots and under the bark. We must be prepared to learn more of the irritating effects of electricity.

The physiological effect of radium energy is being carefully worked out in many of the research laboratories throughout the world; in this country painstaking investigations are being conducted by the Rockefeller Institute, the Harvard Cancer Commission, the George Crocker

Research Fund, the Research Laboratories at Pittsburg and several others, so that a large amount of data of a practical and definite character may be shortly expected. Already considerable clinical information has accumulated, but unfortunately the great bulk of this has been confined to the action of radium in the treatment of malignant growths. The value of radium, particularly radium emanation, is unknown to medical men generally, but in the near future we are going to learn a great deal concerning the utility of this line of treatment in arthritis, gout and allied conditions. There seems to be no doubt that the curious and little understood effects of certain centuries old spas of Europe are due to the radio-activity of the waters. Hence a very great proportion of the literature put forth before this discovery is worse than worthless truck. It makes painful reading, for it credits the waters with cures in cases which merely needed a rest, a change of scene, diet or exercise, or were in urgent need of suggestion. Moreover the old explanations of the real effects of the waters are now seen to be utter nonsense.

If it is true that radium energy is a potent force in the management of arthritis, gout and conditions associated with heart and kidney affections, as there are excellent reasons for believing, then it is high time that more definite information relating to the laboratory findings which support such contentions be brought forward. In the absence of this exact knowledge, the new literature has already taken on the unscientific, dogmatic tone of the discarded hypotheses of electrotherapy and balneotherapy. There is sufficient evidence to feel justified in believing that radium emanation is of extreme therapeutic value, but we cannot say how until we know more of its

physiologic action. Trustworthy literature in reporting clinical results should seek to interpret the physiologic effects. Especially should it avoid the mysterious, obscure and enigmatical form of explanation that some authors seem to delight in. The following from a recent book called *The Philosophy of Radio Activity* is a particularly extreme example of what some one has styled an "obfuscatory explanation."

"Thus behind the electron of the atom of the nebular gas, glowing millionfold over the firmament, is the Great Elusive Something That Changes, which is being coiled into denser and denser atoms until—in million millions of years the celestial becomes terrestrial, and the densest of all atoms, uranium, stands as sire to the whole unrolling progeny of radio-activity.

The mystery of the coiling and the mystery of the uncoiling are finite when compared with the infinite mystery of the Great Elusive which is being coiled and uncoiled continually."

Certainly this description of radio-activity does not tend to clarify one's comprehension of the subject.

What is really needed is a better understanding of the physics of radium by the general practitioner, as it is only by acquiring greater familiarity with the physical properties of this element that the physician can employ it intelligently in medicine. The trend of opinion seems to be that radium preparations owe their effects to their emanation power. In other words, radium energy is simply a physical agent and in no wise a drug. Its physiological manifestations then are not those of drug action, but due primarily to the liberation of what is practically electrical energy. Not much is known of the rays that gain birth through the disintegration of the radium atom although expert investigators recognize the *alpha* ray as a positive electron driven off with terrific energy; while the *beta* ray is a

negatively charged electron discharged with greater velocity and with deeper penetration.

It has been demonstrated conclusively that radium when administered internally renders the body fluids radio-active, for even after several days radium salts can be recovered from the blood and definitely measured. So delicate and scientifically correct are the instruments for detecting radium that it is possible to estimate a ten-millionth part of a gram and less. Its presence in the body, therefore, even in infinitesimal amounts can be traced and definitely figured. This is of the utmost importance for it is reasonable to believe that as long as radium or its emanation is within the body its physiological action continues.

In conclusion, while our knowledge of the physiology of radium is limited, sufficient evidence has been obtained of a highly promising character to spur many scientific men and institutions on to further investigation. Ehrlich the Master Pharmacologist—not long since said that the great advances in therapeutics would doubtless come in the application of radio-activity in combination with other agents.

Infantile Deaths and Poverty.—The relation of poverty to child mortality has long been known, but the Children's Bureau of the National Department of Labor has been going into the matter with a little more detail. The results deserve study and world wide comment. Of course, any factor connected with poverty will show higher mortality than the corresponding factor in the well-to-do homes. Filthy and damp houses, for instance, kill more babies than the clean and dry, but that fact does not show the effect of these two factors

alone. It is quite evident that the more Turkish rugs there are on the floors, the lower will be the death rate, not because the rugs have the least effect, but because the persons owning them are able to buy the things needed by the baby. Similarly it will be found that the more expensive the linens and laces of the baby's clothing, the lower will be the death rate; and the more the mothers must work at wages or taking in boarders, the larger the number of fatalities among their infants. The real reason why there are 300,000 unnecessary deaths every year among our babies is that the fathers cannot make enough money to keep them alive. One in every eight born, is foredoomed to early death for this reason and no other. It is not necessarily straight starvation, but precious near it, as well as deprivation of comforts which are necessities for a baby. If the father makes more than \$25.00 a week the death rate of his infants is less than 84 per thousand, if he makes less than \$10 they die at the rate of over 256! Other things being equal, the more babies per family the more perish early.

The Prevention of Infant Mortality.—

The prevention of child mortality is when boiled down largely a problem in the prevention of poverty, and no one knows how to solve that. It is all very well to say that the minimum wage of married men should be twenty-five dollars a week, but can we expect employers to give twenty-five dollars for ten dollars' worth of labor? In many parts of the world men have not been permitted to marry until they had the equivalent of our twenty-five dollar wage, and it was evident that they could support their future children. Any such plan invariably raises the ire of moralists who would rath-

er see 300,000 children yearly brought into the world to be murdered by neglect, than that a small percentage of the 600,000 parents should become immoral if celibate. It is not true anyhow that celibates must necessarily be immoral. Still, if the whole tendency of modern life is towards early and universal matrimony, we must face a continuance of our high infant mortality, unless couples are restrained from bearing children they cannot raise. The National Child Bureau does not mention this side of the matter, and yet it is the vital one. We can scarcely expect the young spinsters employed in that Bureau to discuss it or even know anything at all about it. Public opinion is being gradually formed to the end that parents unable to raise babies will not have them. In the distant Utopia every baby conceived will live to old age, but nowadays only a proportion of them are born and 300,000 in the United States alone are slaughtered by neglect of parents, instead of the deliberate "exposures" of Biblical times. What are we going to do about it? A few years ago such matters were so shocking that we would not even permit their transmittal in the mails, but now the legalizing of abortion and prevention of conception are seriously discussed in professional literature as means of public health and the prevention of mortality. Let our child bureaus speak out if they know anything. Who is the greater sinner, she who destroys an ovum before birth or she who allows it to die after birth? Is it not about time for a frank discussion, in and out of the pulpit, if it will prevent 300,000 yearly murders by neglect? Does it prevent race suicide to increase the birth rate and then let the babies perish? The density of population depends on the food, not on the birth rate.

The State or the Independent Medical Journal?—During the past year numerous opportunities have arisen for taking up the gauntlet and engaging in acrimonious discussion, but as we are opposed on general principles to filling our pages with unfriendly controversies or material pertaining to petty differences of opinion we have studiously avoided many topics that would have used up valuable space without accomplishing any possible good.

Thus, for instance, is the question of the relative value of the state medical journal—the official publication of a "state medical organization"—and the so-called privately owned or "independent medical journal." With deep regret we have observed a tendency in certain quarters to make invidious comparisons between the state and the "independent journal," to foster the spirit of antagonism between these two classes of publications, and in general to advance the claims of the "organization journal" by belittling and depreciating the position and purpose of the "independent." Some of the organization journals, quick to hear "their master's voice" have promptly claimed for themselves all of the virtues and honorable purposes and with equal despatch have ascribed all of the journalistic vices to all medical journals otherwise owned or conducted. Happily the publications willing to stand for dictation or to play the "cat-paw role" have been in the minority and the majority of the prominent state or "organization publications," reflecting the character of the earnest, high minded men directing them, have shown simply an enthusiastic desire to solve their own problems and fulfil their avowed mission. These journals have won a substantial success and proven conclusively that they have a definite place

in modern scientific journalism. We are glad indeed to see them succeed, for medicine has need of them. Under no circumstances do we believe that the success of our efficient state or "organization journals" can or will jeopardize or lower in any way the success of AMERICAN MEDICINE, or any other "independent publication" that deserves to live and progress. There is need for both of these classes, there is abundant room for both, and instead of combatting each other, they can work without the slightest antagonism toward each other. Points of difference will appear; the "organization journal" may take a position on various subjects that the "independent journal" will honestly question. This however does not call for ill feeling or necessitate a quarrel; honest difference of opinion promotes progress. And so each publication, sincere in its convictions and neglectful of no opportunity of advancing its honest views may contribute its share to the determination of the ultimate truth.

AMERICAN MEDICINE, therefore, has no ill feeling towards "organization journals" that are devoting themselves to their own problems and striving to fulfil their legitimate missions. On the contrary, the belief is entertained that the greater success these journals achieve, the better it will be for medical affairs generally; consequently it would be narrow and ignoble to want the useful, well conducted state journals to "fall by the wayside" or suffer any reverse. That they may go on, winning new laurels and establishing themselves more firmly every day as successful exponents of their particular field of medical journalism will be the earnest wish of everyone who has followed the work of the "worth while" state journals during the past few years and had a chance to see their possibilities.

As for the other kind of state journals, the nondescript type that seems to be conducted for no other purpose than to serve as vicarious outlets for venomous attacks and innuendoes against everything and everybody, there is little to be said. The great bulk of the material published by the few publications belonging to this class has been of the "canned" variety and all too plainly promulgated for an ulterior purpose.

Unscrupulous and malicious in their methods, this is perhaps not surprising when it is realized that their management has been held invariably in the hands of the little group of medical politicians that constitute the "control" in certain of our state organizations. The grave evils of "clique rule" are never more evident than in the medical organizations that are dominated by the few men—usually three to seven, sometimes nine—who have the talent, skill and inclination to assume and maintain executive control, for practically every official journal that is neglecting its opportunities and prostituting its purposes is being conducted by a society that is "clique ridden". Of course, not every "clique controlled" organization puts out a discredited official organ, but it can be stated almost as an axiom that every discredited official organ emanates from a "clique controlled" society. It is significant that a worthless, mud slinging publication is never issued by a society in which the democratic spirit really reigns.

The business methods of the discredited type of state journals are in keeping with their other characteristics. The scramble to get advertising—confessedly to "pay the freight"—has gone to lengths of mendacity that would be pathetic if they were not so

vicious. "Cooperation with the advertiser" has been the term constantly pushed to the forefront, but when this "cooperation" has been analyzed it has been found to be nothing but a convenient and ethical designation for what approaches very closely to blackmail. The following, taken from a state journal, well describes the attitude of certain official organs towards medical advertisers:

"During the State Meeting, a member walked up to the business manager of our official organ and said: 'I notice that.....and Company are not advertising in our Journal. I checked up the other day and found that I have spent considerable money with them during the past year. I wish you would write them and say that unless they see fit to advertise in our state Journal in the future, they need expect no further business from me. I'll write them also. I like the way The Journal is being managed and I think it should receive the advertising support of the men with whom we do business.'

"The firm the doctor mentioned was a big instrument house which the advertising department of the Journal has sought to interest for some time. The doctor's promise to write them gave us a new opening and a *heavy leverage*—which will mean in time, that the Journal will carry their advertising and that by reason of receiving more money through this channel we can publish a better journal. Co-operation of this sort is exactly what we have been striving to bring about."

And this is Cooperation! Well it does sound better than blackmail. One is inclined to wonder if the instrument manufacturer referred to is the cut rate dealer who has recently shown a sudden affection for organization journals? If he is the one, a good capable business man's temporary aberration is explained. He is simply a victim of the "cooperation" bludgeon, that's all. To be frank about it we cannot blame any man for throwing up his hands and submitting as gracefully as possible when he is held up, as the gentleman in mind doubtless was. Of course, it makes one feel better while his pockets are being emptied, and his watch and jewelry are being lifted, to

have the genial gunman discourse nonchalantly of "cooperation." It sort of reconciles one to the situation and robs the whole affair of any suspicion of coarseness.

But to consider the proposition more seriously, is there any one who can honestly justify such methods? We happen to know the way many of the clean honorable men in charge of the better class of state journals look upon these tactics and they would no more resort to them than they would to highway robbery.

As one editor expressed it "this telling the advertiser he *must* advertise in our official Journal or our members will boycott his goods, comes too close to road agent practices for us to think of resorting to it for a minute. Our Journal with its circulation of interested readers has a definite value to the advertiser which he ought to see. We try to make him see it in every legitimate way, but if he doesn't, we do not propose to force him by threats or otherwise to take space with us which he does not want or possibly cannot afford. There is another month and season coming, and if we cannot get his business now, maybe we can later. In the meantime we are going on trying to make our Journal more useful and influential among our members.

"In this way we are sure to attract sooner or later advertising of the kind we want without stooping to nefarious practices or sacrificing our self respect."

Could there be a better homily on this topic? Never were truer words written. Every state journal that is faithfully doing its work has a legitimate appeal to advertisers wishing to reach the medical men of a state, and if earnest efforts are directed toward making it more useful to its readers and more influential in its field, it is certain to attract ample advertising. Advertisers

soon find out the profitable mediums and no publication that gives adequate returns will fail to have a satisfactory advertising patronage.

It is a fact, therefore, that the clean, well conducted state journals are opposed to unfair methods, just as are the decent, worthwhile independent publications.

There are independent journals, very probably that have made promises to advertisers that could not be kept. Such methods deserve the strongest condemnation. But it is doubtful if any independent journal ever tried to force an advertiser to use its pages by telling him that unless he took space, every effort would be used to have its editorial staff, its contributors and its subscribers discontinue the use of his products. It is pretty certain that any such threat would have been followed by serious consequences, for there are few advertisers who would not resent such an attempt at coercion coming from an independent publication. No independent journal, moreover, would care to jeopardize its post office privileges by such crooked practices.

Blackmail—or “cooperation improved”—has, therefore, never been one of the sins of the independent journals, however much they may have to answer for in other directions. Happily, the ethical upheaval that has taken place in human affairs generally has not skipped the medical press and for some time there has been a very gratifying tendency towards higher standards in every respect. We believe it can be said without fear of contradiction that there never was a time when the medical journals of this country were doing better work, or serving the medical profession more faithfully than

they are today; never were they more interesting, helpful and efficient; and never were they being conducted along cleaner, more conscientious lines. Our pride, however, in the progress that has been made in so many directions does not blind us to the evils that still remain, or make us oblivious to the many opportunities for improvement. Every medical journal, the management of which is alive to its responsibilities is accomplishing more than ever before, and is going steadily forward. The development of new ideals and the evolution of a keener sense of obligation on the part of those who are engaged in medical journalism are the healthy signs on which we base our prognosis for the future. At any rate, unless medical publications do have high ideals and definite responsibility back of them, they are bound to fail sooner or later. This is especially true to-day, since it is realized that great profits can never be expected from even the most successful medical journals. This seems almost paradoxical but it is a fact that the better a medical publication is, that is, the more serviceable to its readers, and the truer to its ideals—the less profitable it becomes as a business venture. In other words, *the opportunities for improving a medical publication are boundless, while its possible income is essentially limited.* If a journal is conducted with constant regard to its purposes, increase of income will simply spell new opportunity for improvement, and it is surprising how easily *increased cost will keep pace, and often outrun, increased income.* Let no one entertain the idea, therefore, that a fortune is to be made from the publication of a medical journal. The same force and energy put into almost any other enterprise will bring infinitely larger returns in money. But there are other re-

wards than financial in medical journalism, and the chances for good, constructive work and faithful service account for more of its followers than is generally realized. If money alone was the inducement, the great majority of the men directing the principal medical journals of the country would be devoting themselves to other pursuits.

Much of the foregoing applies with equal force to both state and independent journals. And after all is said and done, each medical journal—be it a so-called “organization” or a so-called “independent”—that is fulfilling its mission as best it can, and without malice or ill feeling striving to serve the best interests of modern medicine, surely merits the hearty, whole souled support of every earnest medical man. The physician who denies himself either will certainly be losing much that can contribute immeasurably to his efficiency and success. The alert, up-to-date practitioner will subject himself to no such handicap, but with his own good sense and judgment to aid him will get all the information he can from *both official and independent* journals. He will recognize the purposes of both and as long as they are clean, honorable and useful, he will be true to himself and make the most of what they both give him.

The War and Alcohol.—One of the most extraordinary features of the present devastating war, is the effect it has had on the consumption of alcohol. For many years, temperance reformers have been inveighing vociferously against the evils wrought by the use of alcoholic beverages and recommending that some form of pro-

hibition be instituted. However, as a rule, these indictments of drink have been as “the voices of those crying in the wilderness.” The war has changed all this, and in some of the European countries the past nine months have witnessed greater progress in temperance reform than would have been thought possible from eight years of vigorous campaigning. Russia, which in many respects, and certainly as regards its peasant class, was the most drunken country on the face of the earth, by one stroke of the pen has been rendered the most sober. Absinthe, one of the most deadly spirits and one of the most harmful in its effects on the nervous system has been abolished from France. In Germany the liquor traffic is strictly controlled and in Great Britain strong efforts are being put forth to check the sale of alcoholic beverages. It will be more difficult to prevent the excessive consumption of alcohol in Great Britain than in any other countries. The British have always prided themselves on their freedom to do as they wished, provided that they conformed with the law. One of the most eloquent prelates that ever sat on an archbishop’s throne in England, Archbishop Magee, once said in a speech made in the House of Lords at a time when prohibition was advocated, that he would rather see Englishmen “drunk and free,” than “sober and slaves,” and this expresses the general opinion of Britons. Still as long as the war continues, it may be taken for granted that military and governmental areas will be kept under drastic restrictions. Thus the war in Europe, by emphasizing the impairment of human efficiency resulting from the excessive use of alcohol has had a more far reaching effect on the consumption of liquor than the reformers ever dreamed of.

A Distinction Should be Made Between Prohibition and Temperance.

—In a grave crisis, as in Russia, prohibition may be needed, and its establishment do great good, but in most instances it will fail of its ultimate purpose and not infrequently prove more harmful than beneficial. Temperance on the other hand presents a problem in education, and its progress depends entirely on the growth of sentiment in its favor; in other words, the development of a definite belief in the wisdom and desirability of using alcoholic beverages with real moderation, or of avoiding them entirely. The temperance movement deserves the support of every thoughtful person, for its extension means betterment of the people in every way, hygienically, morally and economically. These results, moreover, will have a permanent and substantial character far and away beyond any that could possibly be accomplished by prohibition. We have no quarrel with those who believe in prohibition. They are sincere and certainly their motives are laudable. But close observation for many years of the effects of prohibitory laws has convinced us that the solution of the liquor problem will never be achieved by restrictive legislation. Intelligent laws to regulate and control traffic in alcoholic beverages will doubtless help, but the problem of the excessive or harmful use of alcohol in any form will be solved only when the people are convinced of the ill effects or dangers therefrom. Already in the United States there has been a truly remarkable decrease in the abuse of alcoholic beverages, and thousands upon thousands of young and middle aged men who ten years ago were accustomed to taking half a dozen or more "high balls" and an equal number of cocktails every day, now go for days without taking a drop. They have not be-

come teetotalers, and if they feel like it, and the occasion seems right to them, they do not hesitate to take a single high ball or cocktail. In response to inquiry, they will say that they have reduced the use of alcoholic beverages because they "feel better without them, do not seem to require anything of the kind, and, as a matter of fact, *can do more and better work*, especially during the day time, *without any stimulation whatsoever*."

Prohibition surely cannot claim any credit for bringing about this gratifying state of affairs; indeed, the growth of practical temperance, as we have depicted it, has been much less marked in prohibition communities, than in so-called "open-wide" localities. No, the result is due to education pure and simple. Men have learned that the use of alcohol places a handicap on their mental and physical powers. Athletes avoid it because they can get along better without it. Business men do not take it because it tends to lower their efficiency, and blunt their faculties. Gradually these facts have become known and driven home by the way insurance companies, the railroads and big business enterprises have demanded men who "do not drink." The wonderful growth of temperance and moderation in the use of liquor must be attributed, therefore, to a better realization of the disadvantages that result from its excessive or unwise use. Intelligent men are taking better care of their bodies, and striving to reach their highest efficiency. Alcohol, instead of helping them, is pretty sure to handicap them. As men have learned this, their common sense has dictated that alcohol be avoided, or at most used with the greatest discrimination. This is why we say that the growth of temperance has been a matter of education. Men know more—therefore drink less.

Needless Tortures of the Incurables.—

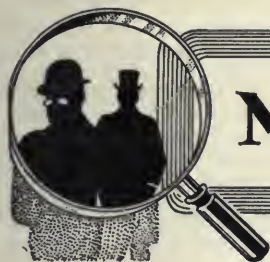
That habit plays an important part in our all too short lives will be conceded. Habits, good or bad, according to each one's view point, are common to all animal life.

Like all else that play a part in life, habits are measurably good or bad; when they do not disturb our physical or mental well being or our relations towards others, they are harmless; when they injure our health and bring us into disharmony with social order or are condemned by our laws, they become vicious. Can we, however, legislate against the more personal habits harmful to the individual and successfully execute the laws? Deprivation of whatever has become necessary to one's existence will be resented, and endured only when the powers of money and ingenuity have been exhausted.

It is, therefore, inevitable that illicit means will be found to evade the drug laws recently enacted in New York State restricting the sale of narcotics. Deprivation of these agents for those long habituated to their use results in terrible suffering, and in many instances will lead to the performance of crime. Would not our law-makers have been more wise to have conferred in greater detail with members of the medical profession concerning the torture to habitues when suddenly deprived of an accustomed drug needed to control suffering, and made some arrangement to permit drug purchases through legitimate channels, rather than to have so summarily cut off their supply without making the slightest provision to care for them or mitigate what in many instances may be almost intolerable distress?

The most thorough surveillance and stringent restrictions to prevent additions to the "dope fiend" class, or illegitimate traffic in

habit forming drugs will have the hearty support and active cooperation of all reputable physicians. Contrary to widespread statements, medical men are not responsible for the majority of "drug fiends." The medical profession in recent years have felt the injustice of this accusation and taken exceptional care to reduce the liability of creating drug habits. At the same time intelligent thought has been devoted to drug habits and an attempt made to ascertain the real causes of the notable increase in those thus afflicted. Much success has attended these investigations and it has been established beyond all possible question that the person addicted to drugs or alcohol is without exception physically defective—not essentially in weight or muscular strength, but lacking in some capacity or power of the nervous system that in a state of perfect health enables the organism to recover promptly from the depressing effects of fatigue, or the ordinary nervous and mental strain of present day living. The individual unable to overcome his condition, falls a victim to drugs or alcohol at the first opportunity, whereas the danger to a normal person would be practically *nil*. These afflicted ones deserve every consideration accorded the sick and irresponsible. Instead of heartless criticism and condemnation they need intelligent care and treatment. Now that the national government has gone to such lengths to prohibit the sale and use of these habit forming drugs, it owes it to a sadly afflicted class to investigate the pathological causes of drug addiction and remove them as much as possible. At any rate, the first principles of humanity require that some well directed steps be taken to relieve the condition that thousands upon thousands of our people are now in, with nothing before them but agony and suffering.



MEN AND THINGS

The question of quarantine takes on especial significance at the present time in view of the diseases raging in Europe, and the practical certainty that these terrible scourges will sooner or later be pressing at the several gateways of our country. Only the utmost vigilance can save us from real calamity. Fortunately, our various quarantine services were never better prepared to protect the country than they are today, and apparently only one thing is needed to raise their efficiency to the highest point. That is to place all the various agencies concerned with quarantine—inter-state as well as foreign—under Federal direction. At the moment our quarantine regulations are mainly if not entirely under state control.

Not a word of criticism can be breathed against the service as now conducted. Only the heartiest commendation is due the Health Officer of the Port of New York and his capable staff. He has done his work well and every confidence may be imposed in the way problems will be met as they arise. But quarantine is a matter that concerns the whole country and should for obvious reasons be national in its scope and direction. Without delay, therefore a national quarantine law should be enacted as soon as Congress convenes, and the whole matter placed where it belongs under the jurisdiction of the National Public Health Service, formerly designated as the Marine Hospital and Public Health Service. Provision should be made if possible to take over the splendidly trained and efficient staff now operating under New York State laws, together with all other state organizations engaged in this line of work. The advantages of a national quarantine law seem to outshadow any possible disadvantages. It has been advanced that it will be unwise to disturb existing conditions, and

run the danger of placing the situation shortly to be forthcoming, in the hands of new and possibly less capable men. We fully recognize this, but believe it will not be difficult to arrange matters so that the present officials can remain in charge, only with the larger powers and increased prestige of being national instead of state officers. So appreciative are we of the abilities of the present officials that we would make their retention in office one of the first and main considerations of the change advocated.

An Inspiring Record.—The death of Sir George Turner, M. B., M. R. C. S., has been announced recently. In England this splendid physician had a world wide reputation owing to his labors among lepers. In fact, when he was knighted in 1913 he was described as another "Father Damien," having contracted leprosy while medical superintendent of the Pretoria Leper Asylum.

Sir George Turner was educated at Cambridge University and Guy's Hospital, London, and for some time was lecturer on Hygiene at Guy's Hospital, as well as an Examiner in Public Health to the Conjoint Board in London. However, his life's work, the work whereby his name will endure was done in Cape Colony, where he betook himself in 1895, and where he quickly demonstrated his special fitness for sanitary direction. At the time of his arrival in South Africa rinderpest was being investigated by Professor Koch. When the German pathologist was recalled, Dr. Turner continued the work and in 1897 was appointed to the charge of the Kimberley rinderpest station, in which position he eventually succeeded in stamping out the disease. When the South African War broke out

Dr. Turner was appointed Sanitary Adviser with Lord Roberts in the Transvaal. At the close of the war, he was appointed Medical Officer of Health of the Transvaal. Although, the work of Dr. Turner as a health officer and in connection with the extinction of rinderpest in South Africa was extremely valuable, his name will ever be associated with his labors in behalf of lepers. As Medical Superintendent of the Pretoria Leper Asylum he was brought into close contact with the sufferers from this lamentable disease. At one time he was in charge of 400 lepers. He devoted all his spare time to the study of the disease, with a view to alleviating the lot of those thus afflicted, and he quickly established his fame as an authority on the condition. He retired from his post in 1908. After his return to Great Britain he continued his bacteriological studies of leprosy, with the hope of advancing our knowledge in the practical therapeutics of this dread disease. It was about this time that he discovered that he had contracted leprosy. In spite of this, however, he lived to the ripe old age of 79.

A life such as that of Sir George Turner is indeed inspiring, and goes to show again how brave and absolutely unselfish are those who are devoting their efforts to discover means to cure or abolish disease. The roll of medical men who have died at their posts is long, and if this awful European war has proved nothing else, it has, at least, shown that men of science are as willing as ever to die that others may live. Sir George Turner was not exactly a martyr to science, yet his whole life afforded a striking example that fear was unknown to him, and he faced the terrors of leprosy as undauntedly as his prototype "Father Damien."

A new bacterin it appears is to be added to the already long and useful list of bacterial suspensions for therapeutic purposes. When Dr. Harry Plotz announced his discovery last summer of the bacillus which he believed to be responsible for typhus fever, it was predicted that before long the general principle which is the basis of Wright's method would be applied to the new organism and a new "vaccine" would

result. We now understand that a typhus bacterin has been prepared by the bacteriologists of the Mt. Sinai Hospital, working with Dr. Plotz, and that it is to be used in large quantities in the campaign against this disease in Serbia. Already some of the American physicians volunteering for duty in Serbia have been immunized, presumably, and it seems altogether probable that we can fight typhus in the same manner which we have used successfully to fight typhoid, Asiatic cholera, and other epidemic diseases, thus materially enhancing the scope and usefulness of Wright's epoch-making discovery.

Dr. Plotz's brilliant work in connection with the study of typhus deserves the hearty commendation of medical men the world over. The success he has achieved is not so much a triumph for youth, as it is for intelligent, concentrated effort. This young scientist set himself a goal and then focussed all his mental attainments on reaching it. Unquestionably he took advantage of all that other workers have done in the field of bacteriology, and neglected nothing that appealed to his judgment as helpful. The whole proposition, therefore, resolves itself down to the earnest, purposeful application of a well-trained, intelligent mind to a definite problem. In other words, Dr. Plotz has achieved his goal because he knew what he wanted to accomplish, and had the necessary education, intelligence and will power to apply himself properly to its culmination. Although there is a great difference in many respects between Admiral Peary's discovery of the North Pole and Dr. Plotz's discovery of the typhus germ, the work and success of these two men have a distinct analogy. Although devoid of the physical hardship of Peary's undertaking, the way Dr. Plotz chose his goal, qualified himself to reach it, and then with earnest purpose applied himself to his self-appointed task, bears a definite resemblance to Peary's successful trip to the goal of his dreams.

Report of Committee in Charge of American Fund for the Relief of Belgian Physicians.

As stated last month we have decided to draw our Fund to a close and therefore advise

any of our readers who may wish to contribute further to send their donations to Dr. F. F. Simpson, Treas. Belgian Med. Relief Committee, Jenkins Arcade Bldg., Pittsburg, Pa.

Through the loyal cooperation of many of the high class medical journals of the United States and Canada we have collected \$1,520.25. Of this sum representing the entire amount of cash in the hands of the Committee, \$1,420.25 has been placed at the command of the General Medical Society of Belgium for the needs of the afflicted physicians of that sorely tried land.

Additional contribution from AMERICAN MEDICINE to meet indebtedness of Committee for special printing, etc. 100

Grand total of cash received by Committee\$1,520 25

DISBURSEMENTS.

Nov., 1914, forwarded to Belgium.....\$700

Dec., 1914, forwarded to Belgium 250

Feb., forwarded to Belgium 200



HARRY PLOTZ, M. D., DISCOVERER OF THE TYPHUS GERM.

The following is the full financial statement of the Fund to date:

Amount acknowledged in last issue ..	\$1,411 25
Dr. H. C. Rooth, Buffalo, N. Y.	2
Mrs. F. C. Kimball, Groton, Mass.	2
R. C. Bourne, Acton, Mass.	1
A Friend, New York City	1
Dr. C. A. C. New York	1
Dr. Samuel Outwater, Riverside, Cal. .	2

\$1,420 25

Mar., forwarded to Belgium	200
Mar., Paid for special printing expenses etc.	100
Mar., Cost of exchange transmission of funds to Belgium	6 84

Total disbursements to April 25	\$1,456 84
April 25th, Donation to close Fund ..	63 41

Total\$1,520 25

It will be noted that the contributions received have been devoted exclusively to the purposes for which they were given. Special expenses for printing, etc., have been met by a special contribution from AMERICAN MEDICINE in addition to its original gift of \$75. The routine expenses covering stationery and other printing, postage, clerical hire and all the other incidental items have also been borne by this journal. The whole expense has been as low as possible without endangering efficiency and has aggregated about \$145. This does not appear in the financial report.

A careful study of the funds collected shows some very interesting facts. For instance there have been 528 contributors divided as follows:

SUMMARY OF CONTRIBUTIONS.

2	.....	\$100 00	.....	\$200 00
1	.....	75 00	.....	75 00
6	.....	25 00	.....	150 00
1	.....	15 00	.....	15 00
27	.....	10 00	.....	270 00
83	.....	5 00	.....	415 00
8	.....	3 00	.....	24 00
5	.....	2 50	.....	12 50
46	.....	2 00	.....	98 00
176	.....	1 00	.....	176 00
173	.....	Miscellaneous	.....	90 75
528	.....	Total	.....	\$1,520 25

In drawing these labors to a close we wish to express our sincere gratitude to all who have aided in this undertaking.

Our Fund has been moderate in size, but all who have helped to make it what it is, may be sure that the timeliness of this work made it especially effective. Our Committee was the first in the field and was able to collect and despatch a liberal sum to the physicians of Belgium over a month before the second Committee in this country was organized. We do not mention this in any unkind spirit nor as a reflection on those who followed us but merely to justify the formation of this Committee, and to show not only that its services were sorely needed at the time, but that its labors have been productive of great good to our Belgian brothers.

The needs of the physicians of Belgium are still very great and it is hoped that the medical men of this country will continue to do all they can to lighten the still heavy burden of our suffering Belgian colleagues. Every dollar that can be spared should be forwarded to Dr. F. F. Simpson, Treas., 7048 Jenkins Arcade Building, Pittsburg, Pa.

With a final word of grateful appreciation to our contemporaries who have so ably supported us, to our colleagues who have stood by us, and to our contributors who have responded so nobly to our appeal, we bring this report and the labors of the American Fund for Belgian Physicians to a close.

Respectfully submitted,

H. EDWIN LEWIS,
Secretary.

Progress is necessary nowadays for every institution or enterprise. To repeat the Irish bull perpetrated by a famous English statesman "to stand still, is to go backwards." In medical journalism especially, there can be no "standing still." In recognition of this AMERICAN MEDICINE is constantly seeking to "go forward," and increase its value to its readers. Last month we established a new department on "Modern Remedies"—to be conducted by a recognized expert, Dr. John W. Wainwright. This month we are providing still another, this one on "Rational Organotherapy"—and also to be under the editorial direction of a recognized expert. The enormous growth of interest in the internal secretions, particularly in their relation to practical therapeutics would seem to make such a department of considerable moment to the thousands of progressive readers of this journal who wish to learn all they can about these new additions to the materia medica, and through their own clinical studies, form definite conclusions as to their actual therapeutic value.

Our good fortune in securing Dr. John W. Wainwright to conduct "Modern Remedies" has continued in arranging for this latest department on "Rational Organotherapy" and it is with deep gratification that we are able to announce that it will be directed by Dr. Henry R. Harrower. Dr. Harrower has been giving this important subject careful, painstaking study for several years and has had exceptional opportunities both in this country and in England to gain a broad and comprehensive knowledge of the internal secretions and their therapeutic application. His great work on *Practical Hormone Therapy* published a few months ago not only immediately placed this young physician in the front rank of scientific investigators, but showed what notable progress had been made in a field that the average practitioner knew very little about. This book has given a notable impetus to the study of organotherapy and helped wonderfully to put the whole subject on a practical working basis.

In presenting this new department, and enlisting Dr. Harrower's services, AMERICAN MEDICINE aims, therefore, to leave no stone unturned to ascertain the true worth of these new therapeutic agents, and point out as accurately as possible not only their uses but with equal fidelity—their limitations and contra-indications. Organic products have won a place in the modern conflict with disease as definite and fixed as have the serums, vaccines and bacterins. It will be our purpose, so far as may be within our power, to demonstrate that place, and by the presentation of true and accurate data to do our part to help organotherapy win the recognition it so evidently deserves. We believe therefore, our readers will find this new department another step forward.



THE WORKMEN'S COMPENSATION LAW FROM MEDICAL STAND- POINTS.

BY

THOMAS DARLINGTON, M. D.,
Commissioner New York State Workmen's
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New York City.

There are many things in the New York State Workmen's Compensation Law—both in the law itself and in its administration—that are of interest to the physician. The law takes much from the lawyer and gives it to the doctor. Before the passage of this law, a large majority of these accident cases were treated at hospitals and clinics free of charge. Those treated in hospitals were largely charged against the city and were paid for by general taxation; now the industry pays these charges. Formerly many who went to physicians' offices were able to pay little, if anything; now the law requires the employer to pay at reasonable rates for the physicians' services.

Let me quote two sections of the law and comment a little upon them.

13. Treatment and Care of Injured Employees. The employer shall promptly provide for the injured employee such medical, surgical or other attendance or treatment, nurse and hospital services, medicines, crutches and apparatus as may be required or be requested by the employee during sixty days after the injury. If the

employer fails to provide the same, the injured employee, may do so at the expense of the employer. The employee shall not be entitled to recover any amount expended by him for such treatment or services unless he shall have requested the employer to furnish the same and the employer shall have refused or neglected to do so. All fees and other charges for such treatment and services shall be subject to regulation by the Commission, as provided in Section 24 of this chapter, and shall be limited to such charges as prevail in the same community for similar treatment of injured persons of a like standard of living.

24. Cost and Fees. If the Commission or the court before which any proceedings for compensation or concerning an award of compensation, have been brought, under this chapter, determines that such proceedings have not been so brought upon reasonable ground, it shall assess the whole cost of the proceeding upon the party who has so brought them. Claims for legal services in connection with any claim arising under this chapter, and claims for services or treatment rendered or supplies furnished pursuant to Section 13 of this chapter, shall not be enforceable unless approved by the Commission. If so approved, such claim or claims shall become a lien upon the manner fixed by the Commission.

Law must be interpreted in the light of reason. In deciding what is reasonable and

proper each individual case must stand by itself upon the necessities of that particular case. The first question which naturally arises is, what may an employee request? May he request to be attended by his own physician? It is well known that confidence in one's physician is a good portion of the battle toward recovery. Is the request of an employee to have his own physician a reasonable request? The Commission thinks that usually it is.

Another problem on which the Commission has frequently to pass is the amount of physicians' bills. These bills are not collected by the Commission. If the employer or the insurance carrier protest the bill, the Commission may pass upon the amount involved and state what it thinks is a reasonable and proper charge. But the Commission cannot enforce the payment. That is for a court to do. Under Sections 13 and 24 of the law, read together, medical service extending beyond sixty days may be made a lien upon the compensation awarded to the workman.

As physicians' fees differ somewhat in different communities and under different standards of living, the Commission has not adopted any general schedule of fees. Nevertheless, as it is necessary to calculate premium rates and the medical services in most cases is a part of the insurance, there must be some fee schedule for insurance carriers to work from. As a kind of index it may be said that in the State Insurance Fund the amount calculated to be necessary to pay for the medical services is 28 per cent. of the premiums collected. In other words, it is calculated that the amount paid physicians annually by the State Insurance Fund is \$400,000.

The second thing to which I would call attention is the large number of septic

wounds. An observer at a public hearing of New York State Workmen's Compensation Commission, noting the victims of accidents as they appear there, would be impressed with the large number of deformities of fingers and hands due to infection of wounds. Case after case has come before the Commission where such poisoning has resulted in necrosis of bone and made necessary its removal; or tendons have been divested of their sheaths and become fastened to the tissues and will no longer function; or the muscle itself has been destroyed by an abscess; or nerves have been ruined, causing paralysis; or joints have become ankylosed and will not bend. As a result, the fingers and the hands become deformed, twisted and useless. Thousands of dollars in compensation have been lost, and many a good workman has been needlessly incapacitated for life.

Of 15,000 cases in which awards were made by the New York State Workmen's Compensation Commission during 1914, 2,100 cases were examined by the Medical Department. Of these, a little over 17 per cent. or one in every six, were due to septic infection. Of the total number of cases the percentage of infection was probably much higher. Had it not been for such infection, the large majority of these cases would have recovered within the period prescribed by the law as the test for non-compensable minor accidents, to the manifest advantage of all concerned.

Forty years ago it was taught that such infection was inevitable, and that pus in a wound was part of a normal process. At that time Sir Joseph Lister had just commenced to teach antiseptic surgery, but his precepts were not then generally accepted. How wonderfully in the last generation have his claims been substantiated

and corroborated! Now we know that with proper first aid and care, such infection is unnecessary.

The records of the Carnegie Steel Company, the Youngstown Sheet and Tube Company, the Cambria Steel Company and others, prove this. Where formerly in the American iron and steel industry about half of the wounds were infected, now little more than one per thousand cases of injury become infected. This shows what can be done in lessening such infection, in preventing loss of time, in saving payment of compensation, and above all in preventing the horrible deformities which mean so much in the life of the victims of accident.

Having in mind the excellent results thus obtained in the iron and steel industry in the prevention of infection, we naturally inquire why so many cases of infection are revealed to the New York State Compensation Commission as occurring in industries most of which are much less hazardous. Is it the unclean condition of the patients at the time of injury? Or is it the lack of first aid and antiseptic dressing? Or is it lack of immediate care? Or is it lack of skill or carelessness, or lack of antiseptic treatment, on the part of the physician? Does the wound become infected by the physician's hands or instruments? From the dressings removed in many cases it would seem to be carelessness or lack of interest on the part of the physician, for no physician could be quite so uneducated as to apply some of the dressings we have seen.

But septicemia seems in any case quite unnecessary, and the onus lies on the manufacturer who has not provided first aid, or on the insurance carrier who does not obtain skilled physicians, or on the ignorant

and careless physician. It would appear that the practice of surgery is many years behind our real knowledge.

A pin prick has been known to cost a life. Even if an injury does not end fatally, it may cost the insurance carrier, under the Workmen's Compensation Law of the State of New York, for example, as much as \$3,500, and the injured person may never again be able to work. It would be well if employers of labor should understand the advantage of employing competent physicians and of organizing a system of first aid, to the end that every wound should be cared for and that employees be rendered safe from such poisoning.

Extremely interesting, too, is an inquiry into the causes of sudden deaths that occur in the course of employment, other than those due to external violence. Apoplexy is still frequently mentioned as a cause, notwithstanding the fact that sudden death from apoplexy is in fact very rare. Every physician knows, or should know, that instantaneous death occurs almost entirely from arrest of cardiac action, most frequently from aortic valvular disease, though sometimes from obstruction or changes in the coronary arteries, or disease of the mitral valves, or disease of the heart wall. The question arises are sudden deaths due to over-exertion, to strain of work? From evidence before the Commission it would appear that in many cases of sudden death the examination of the patient has been merely superficial and cursory, oftentimes consisting merely of listening to the chest with a stethoscope or feeling for the radial pulse; sometimes not even that much. External examination of the body after death does not, as a rule, give any conclusive evidence of the cause of death. Keeping in mind the failure in

diagnosis as given by Dr. Richard Cabot, it would seem that we should have an autopsy in every case of sudden death. Even then we might not be able to determine accurately the cause of the heart failure. The interesting question arises, are any of these heart failures due to lack of nourishment? More particularly, may not some be due to lack of sugar in the blood stream? Fatigue is in large measure dependent upon the quality and quantity of the food eaten. An examination of many lunch buckets indicates that the selection of food in them is often not adapted to the needs of the system. Are not our heart failures in the course of long illness often due to restricted diet? Are not the heart failures that we meet with in every day life among business men sometimes due to the same cause—going without lunch, for instance? How frequently have we met with men in advanced years doing a full day's work, who diet themselves with the fancied idea that they may work out their own problem of health by such a course of living. These questions cannot be definitely answered from data yet available, but it would seem that they are worthy of careful research work beyond anything in that line thus far done.

1 Madison Ave., New York City.

Practical Method of Returning Pro-lapsed Hemorrhoids.—The mass should be well cocainized and smeared with vaseline. Have the patient assume a squatting posture, and instruct him to bear down as in defecation. He will at first, on account of the pain, shrink from so doing, but can do so if encouraged in his efforts, which will relax the sphincter and insure the return of the mass by proper upward pressure thereon.—*Dr. H. H. Didama, Syracuse, N. Y.*

THE MEDICAL ASPECTS OF WORKMEN'S COMPENSATION.

BY

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Medical Adviser State Insurance Fund.

Workmen's compensation legislation is based on the principle that the cost of industrial accidents, however caused, whether due to the negligence of the employer, of the employee, or of no one, is a necessary part of the expenses of industrial production, which should be made a charge upon the industry, not upon the individual, and as such should be assessed, in the first instance upon the employer in the form of a premium for insurance, and by him passed on the consumer in the form of an advance in price. This principle has long been embodied in the legislation of European states, but it is only within the last four years that it has been enacted into law in this country. The soundness of the principle is generally conceded by economists, and, once accepted and formulated into law, it will never be abandoned.

These laws provide a method of indemnifying workers injured in the course of their employment which is more certain, speedy, economical and equitable than the old employers' liability system. Under the old regime, an injured employee might bring action in court, and if he could prove negligence on the part of his employer or his superintendent, he might eventually recover such amount of damages as a jury would award him. The burden of proof in such a suit rested squarely upon the employee. It was necessary for him to prove fault on the part of the employer or his superintendent. The employer, furthermore, had the use of three powerful defenses, and

one of which, if his plea were sustained, would relieve him from payment of damages. He might plead in the first place that the injury was due to the contributory negligence of the injured employee himself, or in the second place that it was caused by the negligence of a fellow employee, or in the third place that the risk of the injury was understood and assumed by the employee when he entered the service. Employers usually insured their liability on account of injuries to employees, and the defense in actions for damages brought by injured workers was conducted by the insurance companies. This meant that an injured employee was obliged to fight a powerful organization thoroughly equipped with all the financial and legal resources to conduct a long and hard contest in the courts. The odds in this game were heavily against the injured employee.

This employers' liability system was consequently most uncertain as a method of indemnifying the victims of industrial accidents. In fact, only one employee out of eight on an average ever recovered anything in an action for damages brought against the employer. Seven out of eight lost their suits by reason of the difficulty of proving fault and the powerful defenses at the disposal of the employer. This system was very slow in its operation, and furthermore, was most expensive. On an average, only one-third approximately of the moneys so paid by employers ever reached the beneficiaries, the other two-thirds being eaten up by toll taken out in transit for the various expenses mentioned. Finally, it was most unsatisfactory in its general effects upon industrial society. It introduced an element of misunderstanding and controversy, friction and discord, bad feeling and ill will in the relations between em-

ployer and employee. It made for strife and conflict in the industrial world.

In place of this old system of employers' liability, the new law of workmen's compensation introduces a plan of indemnifying injured workers that does away with the evils which have been briefly outlined. Under the new system it is not necessary for an injured workman to go to court in order to secure compensation. He is not required to prove fault on the part of the employer or his superintendent. The old doctrine of fault has been swept away. The burden of proof has been shifted from the employee to the employer.

In considering the Medical Aspect of this Workmen's Compensation Law, let me quote Section 13:

"TREATMENT AND CARE OF INJURED EMPLOYEES. The employer shall promptly provide for an injured employee such medical, surgical or other attendance or treatment, nurse and hospital service, medicines, crutches and apparatus as may be required or be requested by the employee, during sixty days after the injury. If the employer fail to provide the same, the injured employee may do so at the expense of the employer. The employee shall not be entitled to recover any amount expended by him for such treatment or services unless he shall have requested the employer to furnish the same and the employer shall have refused or neglected to do so. All fees and other charges for such treatment and services shall be subject to regulation by the Commission as provided in section twenty-four of this chapter, and shall be limited to such charges as prevail in the same community for similar treatment of injured persons of a like standard of living."

Thus, you see, the employer is obliged to furnish medical attention as soon as he learns of the injury, and it follows that if the medical service be prompt and efficient, the time of disability is shortened, the danger of infection lessened, with a conse-

quent absence of serious complications resulting in a permanent disablement. During the time of treatment, the attending physician is more or less apt to discover any existing organic disorder, and an effort made to correct the fault. The employer is benefited inasmuch as the period of disability is shortened, and his trained working force is less disturbed, and furthermore, he will in the future appreciate the necessity of having healthy workmen and endeavoring to keep them so by means of proper hygienic and sanitary surroundings, for the healthy workman is usually efficient, and the efficient workman is less seldom injured. The community will be benefited to the extent that the injured workman or his family will not become a charge upon the public charities.

There is still another aspect to be considered. Workmen's Compensation Acts have been effective in some of the European states for twenty years or more. It is alleged, with substantial proof, that Workmen's Compensation Acts have been followed by successful attempts at malingering, it being more difficult year by year to get injured workmen cured of their injuries. The growth of new forms of nervous diseases arising out of Workmen's Compensation Acts had begun to attract attention in Germany as long as twenty years ago. European doctors are accused of using irregularly the Workmen's Compensation Act as a form of revenue; some of the workmen are accused of exploiting their accidents, a process so human and easy to understand that it is quite a normal and psychical proceeding. It does not follow that all these cases of simulation are wholly fraudulent, because there is nearly always ground for making the original claim. German literature on this subject gives the

case of a man who hoodwinked the insurance authorities in Berlin for the payment of 50 per cent. of his average weekly wages for a disability arising out of industry and who was accidentally discovered to be following the occupation of an acrobat in Alsace. Another case has been quoted where a man drawing disability payment for an injured elbow, at the same time under another name was earning a living as a pugilist. These cases are not manifesting themselves in great numbers in this country, but there are already indications that before long they will be of sufficient importance to constitute a problem, and this problem can only be solved by the hearty cooperation of intelligent physicians.

Such cases involve aliens of a certain type, temperamentally nervous, alcoholics whose vital energy and stamina have become undermined; the subnormal, neurotics, and those suffering from various forms of nervous diseases. The lazy and incompetent—the failures in industry—may prefer after injury to receive two-thirds of their average weekly wage for an indefinite period rather than trying to get work at their old or in any occupation.

Before the act went into effect the uninsured workman with a broken leg whose muscles became contracted and partially atrophied because of the fracture, was forced by necessity to go to work and did go to work. Every day he found that the pain was less and less, and it soon disappeared. The injured employee receiving two-thirds of his average weekly wage under a compensation act, and who for any reason is not ambitious, may, and sometimes does refuse to go to work while there is any pain in the injured part. The longer such injured employees stay away from work, the harder it is for them

ever to go to work, and unless prompt and stringent means are taken to force them back into employment, it is not long until the atrophy becomes permanent, and the injured employee becomes a charge on the law up to the full period of total disability, and subsequently on private or public charity.

Let us now consider the status of the physician prior to the enactment of workmen's compensation laws.

Employers were not required to pay for medical services furnished to injured employees except as included by the jury in fixing the damages in the small number of cases in which employees received damages. Secondly, not only were employees often neglected at the time they needed medical service most, but their physicians received remuneration only as the employees were able to pay. Few employers paid the doctors' bills. If the injury to an employee was serious, he was at once sent to the hospital and became a charge upon the state. If the injury was minor, he may have received first aid by a neighboring physician, and later gone to his family doctor, and if he were out of work for a long time, the latter was not paid for many months, or was never paid, or more likely, after receiving first aid, he went to the dispensary until he was able to return to work. It is estimated that less than \$2 on an average case was paid out for medical aid by the injured workman.

The Industrial Commission of Massachusetts states that the average amount received for medical attention is from four to five times as much as was received under the employers' liability insurance, their average now being \$4 to \$5. The amount received under the employers' liability insur-

ance per case treated would seem to be in the neighborhood of \$1.

Many physicians have stated that formerly their bills sent to the insurance companies were paid without question. This was undoubtedly so in many cases, but it must be remembered that he acted in a dual capacity—first as the attending physician of the injured workman, and second, sub rosa as an assistant claim adjuster. The insurance company realized that it paid to have the physician as a friend. I cannot emphasize too strongly the fact that in the past in from 50 per cent. to 75 per cent. of the cases taken in the aggregate, no pay was received for medical services rendered, and of the cases that were paid for by the insurance carrier or the employer, most of those went to the contract surgeon, and a tremendous amount of free work was done by the family physician and the hospital.

In discussing the amount of the fee for medical services rendered, one fact must be borne in mind, and that is that the charges, according to law, must be made on an industrial accident basis, and upon no other basis can it be considered. It is well at this point to have a general idea of other workmen's compensation acts in foreign countries. Let us take England and Germany for example: These countries exhibit the effect of general contract surgery as carried out on an immense scale. In these countries, the workmen's compensation fund is safeguarded by legal sick benefit societies, to which the employer as well as the employee contribute, all being under state supervision. These societies, crafts, lodges, etc., are very numerous. Compensation for the first thirteen weeks of disability after an injury is paid from the

sick benefit fund each society providing for its own medical aid and on a contract basis often on a competitive bidding system, all are specific sums fixed in advance and not depending on the nature or extent of the injury or the number of visits made. These contracts exist even with druggists and hospitals; some of the societies even have their own hospitals.

In view of the fact that the cost of medical services has increased out of proportion to the cost of compensation, it is well to consider that such system may in the future prevail in this country. It is easy to conceive that with the progress of these laws, unless properly safeguarded, they may result in the practical enslavement of the medical profession to a bureaucracy created by legislative act. The recent history of the European countries will bear this out. Industrial accident boards have foreseen the possibility of such laws and this is the reason why such extreme care has been taken that the initial steps in planning procedures shall be along lines approved by the profession generally.

In criticising the inevitable mistakes of such boards, doctors should not forget that they have always kept in view the ideal of the future of the medical profession who, when things work out as planned, will be left free from the bureaucratic trammels and retain all the rights of which in the progress of social laws in the European countries, in large measure, they have already been deprived.

Under Section 13 of the Law which I have just cited, the medical profession of this state is receiving more in fees than in any other commonwealth. There is no limit to the amount to be paid for medical services for the first sixty days. This is a longer period than in any other state, and

it has been our experience that the cost of such medical service has been greater than elsewhere.

The Medical Society of the State of New York, feeling that this question was a vital one to its members, appointed a committee at its last annual meeting to discuss this question. This committee met several times in consultation with members of the Commission and representatives of insurance companies, and agreed upon a tentative scale to last at least a year. In arriving at these rates they considered all the county fee bills that are now in force in New York State, and from these fee bills, and from the fee bill as presented by the insurance company, the present medical and surgical fee bill as you have now seen was evolved. This schedule was presented to the Commission, but the Commission did not adopt it, but said that they would use it as a guide in determining the charges for medical services in disputed cases.

In regard to this fee bill, I think you will all agree with me that the Commission must have some point from which to start in order to determine a just and fair amount for physicians' services. They may just as well have started from a maximum or minimum figure, but I am confident that the committee appointed by the Medical Society felt that it had arrived at a fair average figure.

The *New York State Journal of Medicine* recently stated: "It is true that the fees agreed upon for specific surgical operations appear small and ill-proportioned. They are small when viewed from the heights of surgical eminence, but to the vast majority of surgeons, the certainty of their payment lends to them a delightful attractiveness in the knowledge that they formerly received from this class

of patients, nothing. It is a fact, however, that these rates are higher than those of any of the states in which Workmen's Compensation Laws are in operation."

I must again reiterate the statement that charges for medical services are made on an industrial accident basis. The Act contemplates the payment of reasonable compensation to the injured, and reasonable compensation for medical attention. As I have pointed out before, and I think that you will all agree with me, from 50 per cent. to 75 per cent. of the cases were treated without cost of medical service, and here it is perhaps pertinent to state that there must be a certain degree of uniformity in these charges. It should be quite apparent to the vast majority of physicians that we cannot consider one surgeon's services to be of greater value than another's for the same kind of treatment unless it is for special work, which we shall discuss later. It has been stated that the cost of rendering medical services is greater in some localities than in others. It is my opinion, however, that this is not so. It is generally appreciated that in reality when considering the subject from an industrial accident standpoint, there is little difference made in the charges against workmen in the city and those in the country. The greater difference lies not in the charge made for medical aid but in the amount collected. Statistics show that nine-tenths of those who are propertyless and those who are paupers in the city belong to the industrial class. The high cost of living affects them the same as the employer or the physician. The maintenance of a physician's office varies immensely in the same city. When compared with those physicians in the country, it might be found that many country physicians have a much

higher upkeep expense than many city physicians. When everything is considered as to medical fees on an industrial accident basis, and likewise, the rendering of good medical aid in all instances, it will be found that there is practically no difference in respect to the charges that should be made.

In the early days of the Ohio Commission the law specifically provided that awards should be paid to the injured workman. This included medical awards. The Commission started out on this basis, and sent to the injured man the money in payment of his disability award, and in addition, the medical award. No sooner did they begin this practice than a veritable storm of protest was filed by physicians, stating that they were not being paid for their medical services. They practically were in the same position as they were before the law was passed.

Many physicians render bills from the standpoint of private practice, and do not look with favor upon the reduction of their fees. The fact that a bill is reduced does not mean that the integrity of the physician is questioned; it means simply that the bill has not been rendered in accordance with the Law. The charge for first aid or operations is seldom questioned; it is the question of too frequent after dressings. When I say this I do not question the physician's motive. It can easily be appreciated that in an operation case, for example, it might be the honest practice of some physicians to dress the injury twice each and every day until the operation is completely healed. It might be the practice of others to dress it every other day after the first two weeks. It might be the practice of others not to dress it every other day after the first two weeks. This difficulty comes up in enumerable cases, and in these cases we must

necessarily attempt to use judgment and approve of visits according to the best surgical teaching known to us. We simply state for what it is worth that some physicians under ideal conditions and as employed by large corporations, have reduced their number of dressings per case treated, taking all cases in consideration, to an average of approximately three dressings per case, and at this, an infection rate of one in a thousand cases, while our cases of infection run nearly one to every ten cases. This, to our mind, simply demonstrates what can be done under favorable conditions. It further demonstrates that too frequent dressings add danger of infection and are an admission that the wound was probably not rendered as aseptic as it should have been to start with. Notwithstanding the rates laid down for specific surgical operations, the majority of bills presented by physicians come under the heading of office and house visits.

In regard to the collection by physicians of fees for services rendered to workmen who come under the Law—in collecting bills, it is well for physicians to ascertain from the employer the name of his insurance carrier, and to render his bill directly to the insurance carrier. This will save considerable time and facilitate payment. If it is impossible to ascertain the name of the employer or insurance carrier, the bill may be sent to the Commission to ascertain these facts. If there is a dispute as to the amount of the bill, either the physician or the insurance carrier has the privilege of bringing the matter to the attention of the Commission whose decision is final.

There has been more or less misunderstanding in the relation between the insurance carrier and the hospital surgeon.

Compensation cases should no longer be admitted to hospitals as charity patients. They do and should pay at least the cost of their maintenance, and furthermore, the attending surgeon should receive just compensation for services rendered. Unfortunately, insurance carriers have been put in a wrong light by the action of many hospital boards who have felt, and always will feel, that the honor of serving on the medical board is sufficient reward for the attending staff. When cases go to dispensaries, unless there is a division devoted to compensation cases, it seems almost impossible to remunerate the medical man. The injured workman is treated by any number of doctors from day to day, consequently resulting in dissatisfaction on his part, and the inability of the insurance carrier to determine to whom remuneration is due for medical services.

There are doubtless many points which I have not touched upon in this short paper, and which I trust the discussion will bring forth. You must bear in mind that this Law is new, and that its workings are necessarily more or less imperfect. Time, however, will adjust these differences to the satisfaction of all concerned.

Acute Bronchitis.—Inhalations of recently prepared tincture iodine from wide-mouthed bottles are found to cure bronchial catarrhs in four days. Inspiration—from four to eight or more at each sitting—to be more or less deep, according to severity of case. Inhalations to be repeated five or seven times a day. If much mucus, expectoration to be assisted by usual remedies. In children, iodine tincture may be dropped on pieces of cotton to be laid on pillow (over oilcloth) while patient is sleeping.—*The Med. Brief.*

THE LEGAL ASPECT OF THE WORKMEN'S COMPENSATION LAW AS IT AFFECTS THE MEDICAL PROFESSION.

BY

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The Workmen's Compensation Law, being Chapter 67 of the Consolidated Laws of the State of New York, is entitled—"An Act in relation to assuring compensation for injuries or death of certain employees in the course of their employment * * * *." It is, in effect, a scheme of insurance against liability of the employer created by the Act for injury or death to his employee in the course of his employment, against which liability the employer is compelled to take insurance. The beneficiary is the insured employee, or in the event of his death his dependents. The insurer—called insurance carrier—is the state or such corporations as are authorized to transact the business of workmen's compensation insurance in this state, or the employer himself when the Commission is satisfied with his financial responsibility or with the securities which he may deposit with it. (Section 50, Section 3, Sub. Div. 12).

There are forty-two specific occupations designated in the Act as hazardous (Section 2) in which any employer who employs men becomes liable for injuries or death to such employees in the course of such employment, save only "when the injury is occasioned by the wilful intention of the injured employee to bring about the injury or death of himself or of any other or where the injury results solely

from the intoxication of the injured employee while on duty." (Section 10.) For failure on the part of such employer to insure himself against this liability he is liable to a penalty (Section 50) and in an action brought for such employee's injury or death, such employer, who has failed to insure himself as required by the Act is deprived of the benefits of pleading in defense contributory negligence, the fellow servant rule or the assumed risk principle (Section 11) so that there is practically no escape by legal technicality from the liability of the employer thus created to his employee who is injured or killed in the course of such employment.

Thus the Act creates for a large class of employees definite rights and for the corresponding class of employers definite and positive duties in respect to those rights, and the purpose of the Act is primarily to provide legal machinery for the enforcement of such employee's rights with adequate safeguards, both to employer and employee, against injustice and abuse.

What then is the position of the medical man in this situation? We have seen from the discussion thus far that he is not one of the primary factors—he is neither the one for whose benefit the Act primarily creates rights, that is the employee, nor the one charged with a duty in respect to those rights, that is the employer. The employee by Section 13 of the Act, is entitled under certain circumstances to medical, surgical or other treatment which requires the services of a physician or surgeon. This right in the employee is enforced by placing upon the employer the duty to provide such medical, surgical or other treatment. This duty of the employer arises only when the right of the employee exists. The physician or surgeon rendering service to such

employee does so in reliance upon the right of the employee thereto and the duty of the employer to provide therefor, so that the medical man supplies that to which the employee is entitled and that for which the employer is liable. Obviously the medical man has no standing under the Act unless the employee is entitled to the services which the medical men furnishes, so that the medical man's rights in respect to the service furnished by him is based and conditioned upon the right of the employee, and the employee's right is the paramount one and the medical man's right conditional and secondary.

The Act was not designed or intended as a benefit or a hardship to the medical profession—and its effect on the medical profession is but an incident of its operation and subordinate to the purpose for which it was intended. The interpretation of the Act in every particular, including the aspects that affect the medical profession, therefore, must be in harmony with its general purpose as well as in obedience with its specific terms.

A workman injured in the course of his employment, under Section 13 of the Act, is entitled as an absolute right, for the mere asking, for a period of 60 days after such injury to "medical, surgical or other attendance or treatment, nurse or hospital service, medicines, crutches and apparatus as may be required"—and it is obligatory upon his employer to provide such services promptly. The charge for such services or any portion of the insurance premium paid by such employer for insurance carried for the purpose of providing such compensation cannot be deducted from such employee's wages. (Section 31).

The scope and intent of Section 13 of the

Act is to define clearly the obligations of the employer to the employee in respect to medical treatment of such employee and to safeguard the employer and employee in respect to the necessity of such treatment, the proper request therefor and the charges to be made therefor.

The last clause of this section is as follows: "All fees and other charges for such treatment and services shall be subject to regulation by the Commission as provided in Section 24 of this chapter and shall be limited to such charges as prevail in the same community for similar treatment of injured persons of a like standard of living." This is clearly intended as a protection to the employer or insurance carrier against exorbitant or unusual charges for medical services rendered the employee and provides a limit based upon the prevailing charges in a given community and the standard of living of the injured employee, beyond which limit the employer or insurance carrier shall not be liable.

When a statute makes compulsory upon a certain class of the community to assume definite obligations for the payment of money to their employees under conditions which modify the common law principles of liability of an employer as that has been understood and interpreted, it is necessary to check any abuse possible under such departure from recognized and tried legal principles by safeguards, though such safeguards may occasion to parties other than the employer or employee some hardship or incidental sacrifice. Doubtless the last clause of Section 13, above quoted, may as such safeguard to the employer occasion some hardship or incidental sacrifice to the medical man. So that in considering the legal aspect of the Workmen's Compensation Act as it affects the medical profes-

sion, we must keep clearly in mind that those provisions of the law are primarily enacted for the protection of the employer and insurance carrier and the employee and not as a special benefit or privilege to the medical profession.

Not only does this appear to be true concerning the rule laid down in Section 13 for the fixing of the medical man's fees, but likewise, for the rule under Section 24, which gives to the medical man upon the approval of the Commission, a lien upon the compensation awarded. At first blush it would appear that this provision giving such security to the physician was designed solely for his benefit but it is apparent from the context of that Section that the entire spirit and intent is again to protect the class on whom the law places the obligation to pay. For were the amount awarded to an injured employee to cover his compensation and expense of medical attention paid directly to him, to whom the medical man should look for the collection of his fees, such award possibly might not reach the physician entitled thereto and claim might be made by the physician against the employer or insurance carrier. The employer and insurance carrier are safeguarded against such condition arising by the provision creating for the medical man a lien on the award.

Prior to the enactment of the Workmen's Compensation Act, the physician's relation with the injured employee was, except in some instances where the employer voluntarily furnished such medical service, one governed by express or implied agreement as to the compensation to be paid for such service. The employee was usually not sufficiently responsible financially to make it worth while in the event of non-payment, for the physician to institute suit. Under

the Workmen's Compensation Law the service of the medical man is still rendered to the injured employee, but the obligation to pay therefor has been shifted from the financially irresponsible employee to the financially responsible employer—to the apparent advantage of the medical man. The expense of attorney's fees, court costs and delay, as well as the uncertainty of a jury's verdict, no longer vex when working under the Act, because the Commission is empowered to pass upon the claim summarily and when so passed upon, as already stated, the claim becomes, under the provisions of Section 24, a lien upon the compensation awarded.

The actual disbursement of the award so made is done by the Commission (Section 25) so that a physician's claim under the Act, is secured by a lien backed by the state and is collected through the agency of the state. Thus in the regulation of the relations between the employer and the injured employee, the state in safeguarding those parties have, as an incident to the protection of their respective rights and the enforcement of their respective obligations, bestowed upon the physician whose claim arises under the Act, the benefits of absolute security. The physician will not be heard to complain of these benefits, but may be heard to object to the amount of his award. In considering the amount awarded for his services he should naturally consider the fact that investments from which the element of risk has been eliminated and the security of which is, in effect, guaranteed by the sovereign power of the state, may give a smaller yield than those of highly speculative character. The physician's investment of his time and talents in the treatment of injured workmen under the Workmen's Compensation Act

provides a return that is certain and sure, and if by choice he engages in this work, accepting the security which it affords, he may expect for such security somewhat reduced compensation afforded in such cases.

Under these circumstances, what schedule should be adopted for regulating the medical man's fees in cases comprehended by the Act? In the twenty-two states now having an Act of this general character on its statute books there is wide diversity concerning the provisions affecting the compensation accorded the medical profession. In the states of Arizona, Kansas and New Hampshire, the charge for medical services under similar Acts is paid only in the event of the injured man's death and then the maximum paid in Kansas including burial expenses, is limited to \$100 and in New Hampshire to \$200. The period during which medical attendance is furnished to the injured employee, after the injury, varies greatly in the various states. In Texas it is one week, in Iowa, Louisiana, Massachusetts, New Jersey and Rhode Island, two weeks, in Michigan and Nebraska three weeks, in Connecticut 30 days, in New York 60 days, in Illinois eight weeks, in California and Minnesota 90 days, and in Kentucky, Maryland, Ohio, Oregon, West Virginia and Wisconsin no arbitrary statutory period is set.

The law in the following states fixes an arbitrary maximum that can be paid under the Act for medical services as follows:

Kansas, \$100, including burial.

New Hampshire, \$200, including burial.

Iowa, \$100.

Louisiana, \$100.

New Jersey, \$50.

Nebraska, \$200.

Idaho, \$200.

Minnesota, \$100, with a possible additional maximum of \$200.

Kentucky, \$100.

Maryland, \$150.

Ohio, \$200.

Oregon, \$250.

West Virginia, \$150.

In the other states having such an Act, no maximum is fixed by the statute, it being in most instances provided that reasonable medical aid shall be given to the injured employee.

In New York we have seen under Section 13 that the medical fees and other charges are subject to the regulation by the Commission and are "limited to such charges as prevail in the same community for similar treatment of injured persons of a like standard of living," so that in this state the medical fees are not restricted by a hard and fast maximum as we have seen is the rule in many states, nor are they left to the Commission without a definite rule being laid down by the law for their determination.

A definite and rather flexible rule is laid down for the gauging of such fees, requiring on the part of the Commission in *each* case, a consideration of the charges for similar treatment, prevailing in that particular community where the service is rendered and of the standard of living of the person treated. Following the provisions of Section 13 as above mentioned, the Commission of necessity cannot, with proper respect for the rule there provided adopt any hard and fast schedule for all cases to be applied in all communities of the state to all persons of varying standards of living. *It is plain, therefore, that the so-called fee bill which has agitated the medical profession is not and cannot be a schedule fixed by or controlling the Commission in*

its awards for medical service. This is so not only of this fee bill before us, but also of any other that may be devised that ignores the rules so clearly set forth in Section 13 of the Act.

The Commission in determining in given cases the proper amount to award for medical service must necessarily have some starting point as a basis. It may be a maximum amount that would be charged in a given community to an injured workman, whose standard of living was the highest of those affected by the Act and from that maximum in a given case they might work down by a system in harmony with the provisions of the rule and reach the definite amount of the award in the given case, or on the contrary, they might start with a minimum, represented by such an award as would be made in a given community to a workman whose standard of living was the lowest among those affected by the Act and that from the amount so arrived at, work upward, and determine the amount proper in a given case so that it is immaterial to the medical man what basis the Commission uses, provided it arrives at a result that is fair according to the rules laid down by the law. I cannot but regard this fee bill that I have before me as anything other than a starting point from which the Commission in given cases works, and as such I can see no reason why it can be the subject of serious concern.

There are other legal aspects of this Act of interest to the medical profession for the discussion of which more time would be required than is allotted for this paper. I shall, therefore, at this time, refer to them but briefly. The question has been asked whether the injured workman must accept, under the Act, the physician provided for him by his employer, or whether

he may employ his own physician and have the fees of such physician paid for under the Act. This raises a most important consideration for the medical profession. If the words of Section 13—"The employer shall promptly provide for an injured employee such medical, surgical or other attendance, etc.," are to be interpreted to preclude such employee from employing his own physician at the employer's or insurance carrier's expense, the control of the medical work for injured employee will fast fall in the hands of a few of the large insurance companies and self insuring corporations, and the cases which otherwise would be distributed among a large number of practitioners would become concentrated in the hands of a few.

In the consideration of this condition, we must again hark back to the fundamental principles controlling this Act and keep in mind, as already stated, that it is designed and intended to affect the employer and the employee and their relations to the general weal of the State, and in the consideration of those relations and the interests arising therefrom, the effect upon and the interests of the medical profession are but secondary. Viewed from that point I ask is it a fair interpretation of this Act to say that the employer may force upon the employee a physician to treat the employee's body, to affect his general physical condition, to improve or to impair his health according to his skill or inefficiency, without such employee having any right of selection. The argument is sometimes presented that the insurance companies and employers are able to interest more skilled practitioners in the treatment of these cases in which they are obliged to furnish medical attendance, because of the inducement of large numbers of cases which makes the

physician willing to accept the fees available in such cases. This argument is not to the point. The excellence of the employer's or insurance carrier's physician does not affect the right of the employee to make his own selection. He may select the man that is so represented by his employer or by the insurance companies as so skilful and adept or his own physician. This issue will probably be raised in some case and its outcome will be a matter of serious interest and influence with the medical profession and should be watched and if necessary, some action taken in presenting the medical profession's views to the Commission.

In the legal profession the lawyer and his client are recognized as having toward each other a sacred and confidential relationship and the importance and necessity of such personal contact and relationship between the two has often been a matter of judicial consideration. It is regarded as essential. The furnishing of lawyers by corporations or of legal services has been made a criminal offense (Penal Law, Section 280-275) and the legal profession, through its Bar Associations, is strongly fighting the modern invasion of that sacred and confidential relationship by corporations, voluntary associations and others and insists that the practice of law shall be the personal prerogative of the individual whose character and ability has been tested and approved and shall not become a corporate function, nor shall such service be sold and bartered as merchandise.

I take it that the medical profession is as jealous, if not more so of its standards and of its rights as any other and that the personal relationship between physician and patient is quite as personal and as sacred as the relationship of attorney and client,

and any impairment of the individual's right to select his own physician in whom he has confidence and faith is essentially an impairment of the personal and confidential relationship between physician and patient. I say, therefore, at this time, that it behooves the medical profession when occasion shall arise, to interpret the meaning of the phrase in Section 13—"The employer shall promptly provide," etc., to impress its conception of the rights of the injured workman and of the necessity of the preservation of the personal confidential and sacred relationship between such patient and the physician to whose treatment he shall be submitted. It may be said that the Commission has already recognized the right of the injured workman to have his own physician.

The Commission's award for medical fees is, when the provisions of Section 13 are followed by the Commission, a finding of fact and the decision of the Commission as to all questions of fact is final (Section 20). As to questions of law there is provided an appeal to the Appellate Division (Section 23). If the Commission in making such award has before it evidence which satisfies the requirements of Section 13, then its award is final and conclusive and apparently cannot be reviewed on appeal.

In the brief time allowed for this paper I have touched only upon those legal aspects of the Workmen's Compensation Law which at this time are engaging the interest of the profession—there are doubtless many other questions that will arise from time to time under the Act, of great interest and importance to the medical profession.

It is of utmost importance that the interests of the medical profession be under-

stood and appreciated by the Workmen's Compensation Commission and that in the consideration by them of the rights of employer and employee under this law the sacred prerogatives and professional standards of a great profession should not be impaired.

THE WHOLE TRUTH ABOUT FEE-SPLITTING.

BY

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Muckraking is not a pleasant task, but there can be very little doubt as to its utility. Foul places are soonest cleansed and sweetened by mere exposure to the sun. So foul spots in the bodies politic, economic, social, medical, etc., can be purified by exposure to the light of truth. Many an ulcerous spot needs but to be seen to be healed. This is the sole justification for the present informal contribution to the reopening for discussion of a much-discussed but little-understood phase of the economic side of the practice of medicine. There is hardly a medical journal or newspaper in the land that has not recently had its say on the subject of "fee-splitting," or "division of fees," among physicians. What makes the practice so despicable is the fact that the physician is by virtue of his calling the confidant and trusted friend of his patient; that—in theory, at least—the relationship between doctor and patient is fiduciary, not financial; that the physician is assumed to have none but a professional and humanitarian interest in his patient. If the physician once forgets this and looks upon his patient merely as so much booty, prey that has floated into his

net, and takes advantage of the opportunity offered him, secretly to strip the invalid of more of his worldly goods than is his just due, he justly brings upon himself the contempt of his fellow practitioners and his fellowmen. In spite of this, the practice is almost universal; no country is free from it. It may therefore be of some value to tell the public, lay and medical, the whole truth about it, to inquire into its causes, to consider the reasons for and against it, and to point out ways of remedying it.

By "fee-splitting" is usually meant the secret division between a physician, usually a general practitioner, and a specialist, usually a surgeon, of the fee paid the latter for operating a patient referred to the surgeon by the physician. When and where this practice originated we do not know; in some form it must have existed ever since specialists began to compete for patients. The custom is based upon the theory that the physician who refers a paying case to some one particular surgeon, when he has the choice of many, is entitled to a commission exactly as an agent in a financial transaction. It is also assumed—by a large part of the profession—that the patient is not the loser by the transaction because the surgeon's fee is fixed and that it is none of the patient's business if the surgeon chooses to give away part of his fee. General practitioners and specialists have sought to justify the practice by other arguments, some of which we shall consider, but they have not succeeded in convincing the public of the propriety of their conduct. The public knows as well as we that surgeon's fees are not fixed, that specialists' charges are somehow proportionate to the patient's means, that the specialist who gives the larger commission has

the better chance of being called upon for his services, that where there is an opportunity to make "easy money" men will rarely fail to "fall for it."

A form of "fee-splitting" that has never, to my knowledge, been spoken of in print is the secret division between a general practitioner and a consultant of the fee paid the latter for consulting with the former in a medical (i. e., nonsurgical) case. This is a far more reprehensible practice than the former. The market is full of consultants, professors, visiting physicians at hospitals, etc., who are willing, able and anxious (as the lawyers say), to sell their knowledge and give up a part of their fee.

Fee-splitting is also practiced between the family physician on the one hand and the X-ray specialist and the professional abortionist on the other. But these do not call for detailed consideration.

There is but one cause for the evil we are now considering: Economic necessity. The average physician who has invested his time and his money in learning a profession as a means of earning his livelihood soon finds that the practice of medicine is not a path of roses, that it is not a genteel road to fortune, that all sorts of regular and irregular competitors cut into his income to such an extent that he cannot make an honest living. Poverty will as soon change an honorable physician to a practical business man as beauty will "change honesty to a bawd." The many fake and criminal nostrum vendors have such a large clientele, and the many pseudo-medical sects have such a large following—owing to the native stupidity and superstitiousness of the vast mass of mankind—that very few sensible persons are left for the legitimate practitioner of the healing art. In addi-

tion, he has to compete with the medical charity activities of the Board of Health (a means, incidentally, of mulcting the taxpayers of many millions and giving lucrative position to influential politicians) and of charitable organizations, with the cheap and worthless medical insurance given by fraternal associations, lodges and pseudo-insurance companies, etc. In these and other ways the field of the physician's activities is so reduced that he cannot possibly make his expenses without resorting to various well-known forms of irregular (crooked) practices, one of which is "fee-splitting"—a practice which, though by no means the most important, has received the largest amount of discussion in the public press.

To get a correct estimate of the evil we must see it in operation. A general practitioner—whether on the east side or west side, doesn't matter—is called in to see a patient suffering from what the physician correctly diagnoses as a condition calling for surgical intervention; he advises immediate operation; the patient's relatives, recognizing the dangerous nature of the ailment and the soundness of the advice given, ask the physician to recommend a good and reliable surgeon. In this way the responsibility for the surgical termination of the case is put upon the physician. If the operation "goes wrong" in any way he is blamed for having selected or recommended an incompetent surgeon and he loses the patronage of that patient's family and brings down upon himself their reproaches and slanderous reports. This phase of the subject is never considered by the lay press when discussing the practice of fee-splitting; but the physician realizes it to the full as a result of unfortunate experiences (no surgeon has 100 per cent. of suc-

cesses) and he very properly reasons that he may as well recommend a surgeon who is not only competent but who will compensate him for his risk. But this is not all. The physician also bears in mind that he gives the surgeon the weight of his opinion, his diagnosis, a careful case history and very often, before or during the operation, and even after it, his advice. For these reasons he considers himself entitled to a part of the surgeon's fee. Of course the transaction is open to the charge that the surgeon is only giving the physician a commission for having referred the case to him, and there is unquestionably much truth in this. It might be contended that the patient, not the surgeon, ought to pay the physician for his responsibility in the case. This is a perfectly proper way of looking at the matter, but in actual practice it will not work. Patients underestimate the value of the physician's services and do not believe in paying the "house doctor" for anything but "calls." Besides, if the patient dies or is left with some unpleasant sequel, the physician is almost never paid for his services. It is well enough to say that the physician has his remedy, but as "practical men" we know that most patients are judgment-proof and that the lawyer must be paid. The consultant or specialist, however, almost invariably gets his fee at once or in advance; the patient is now the common patient of the physician and the specialist; and in view of the risks incurred by the attending physician it is fair, as well as "good business," for the specialist to surrender to him a part of the fee. The fate of the physician is indissolubly linked with his consultant. If the consulting specialist fails to make the diagnosis, or fails to impress the patient favorably, or is unsocial,

the attending physician's hold on his case is weakened or wholly shattered and his services are soon dispensed with. And since we are telling the whole truth let us at once admit that consultants do not always make a correct diagnosis; that not infrequently the physician saves the consultant from disgrace by giving him the diagnosis. For this too the attending physician considers himself entitled to a part of the consultant's fee.

It sometimes happens that surgeons and other consulting specialists assume very superior airs in the presence of the patient and thus arouse his resentment. After that it is good-bye to confidence in that consultant, and hostility to the attending physician. I recently lost a case for no better reason than this after having had heaped upon me the patient's reproaches for the surgeon's airs. If the patient learns that the consultant has charged him or her more for his services than he charged someone else for similar services, it also means a breach in the relationship between the patient on the one hand and the physician and consultant on the other. In a case recently under my care in a hospital the patient was informed by a nurse hostile to the surgeon that his usual consulting fee was only fifteen dollars and that she did not understand why the patient had paid twenty-five dollars; the patient left the hospital in high dudgeon. In another case I suffered serious loss as a result of the unwarranted and uncalled for censure, veiled though it was, by a consultant, who was half drunk at the time of the consultation.

Another argument occasionally advanced in the attempt to justify fee-splitting is this: that the surgeon's or specialist's fees are too high and that it is unfair for him

to take all or a large part of the patient's money when the attending physician gets only a dollar or two for his diagnosis and advice. The argument is fallacious. The physician's and the surgeon's fees are established by the custom of the neighborhood in which they practice, or, if they can afford it, arbitrarily by themselves. But, having established their fee, they cannot arbitrarily raise it. Neither a general practitioner nor a consulting specialist may justly raise his price because he has made a diagnosis of a surgical condition which will involve the patient in considerable expense. The surgeon who performs the operation is entitled to a fee in accordance with the principles of supply and demand. If the physician thinks himself inadequately compensated for his call or calls, let him get the extra fee from the patient. A physician who believes he is entitled to a reward for having made a correct diagnosis ought to be willing to be penalized for an incorrect diagnosis. If the physician is not content with his earnings as a general practitioner, let him train himself to do the work of the specialist.

It has recently been argued that the patient's interests are best served if the physician has some inducement—the split fee—for calling in a consultant early. In other words, if the physician does not get a part of the consultant's fee, he will do all in his power to keep the case under his control for as long a time as possible, to the detriment of the patient. The answer to this argument is twofold. In the first place, a physician who will defer calling a consultant from such motives is a criminal, and against such we cannot guard ourselves. In the second place, the disadvantages of calling in a consultant are such that the split fee, in the average case,

is no inducement for calling a consultant. The split fee is not sufficient compensation for the attending physician's loss of prestige with his patient. There is more credit and ultimate profit in bringing a case to a successful termination without the services of a consultant than with it. Every physician sooner or later learns to apply Punch's advice about marriage to consultations.

Another excuse for the secret division of fees is this: the consultant or surgeon does not know the financial condition of the patient and he invariably asks the physician how much he is to charge. The attending physician very naturally and humanly argues: "if not for my tip, the surgeon would have done this operation (or consulted with me) for less; I am therefore entitled to a consideration from him. Furthermore, my calling him into consultation advertises him with the public and with the profession, and for that I am entitled to remuneration. Moreover through my referring the case to him his standing in the hospital in which he operates is enhanced. Besides, the more often the specialist is called upon by the general practitioner the more skilled does he become, the higher the fees that he can command, etc. In other words we, the general practitioners, pull the chestnuts out of the fire for the specialist, and in return for these services we are entitled to a part of his fee."

How does the surgeon or consulting specialist look at the matter? Exactly as the general practitioner does. The physician sings his praises, narrates his wondrous achievements, advertises him, gives him business, etc., and for that the general practitioner deserves to be compensated. Advertising pays. Medical ethics, bless the

mark, does not permit honest advertising. The only way a specialist can advertise himself is by fee splitting. The larger the percentage of the fee the specialist surrenders to the agent-physician the more he is advertised. The consultant or surgeon who gives up half of his fee will have more consultations than the one who gives up only one-third or one-fourth of his fee. The very prominent specialists (the so-called "big-bugs" in the profession, the presidents and ex-presidents of the larger medical associations, college professors, etc., and those who have acquired wealth) whose social position is such that they can no longer risk the secret division of fees, scorning the base degrees whereby they did ascend, and finding their services no longer in demand, condemn fee-splitting and adopt by-laws making the practice punishable with expulsion from official medical associations—a rule which only makes the secret division more secret and substitutes cash payment for checks.

The younger specialists also argue as follows: the college professors and wealthy specialists advertise themselves by their social and religious activities, by the frequent publications of reports of their "researches," by the publication in newspapers of their views on medical topics, by the philanthropic activities of their wives, etc. The very title "Professor" is an advertisement, though the title were bought by a vain and indulgent wealthy father-in-law or were conferred by a shrewd and business-like Board of Directors. The only means of competing with such rivals is by fee-splitting. And here a word or two about the causes of the great increase in specialists is not wholly out of place. Dr. Morris—in a letter to the *Times*!—sees the cause in the great difficulty that the practi-

tioner has in keeping up with the progress of medical science. The true causes are laziness, increasing age (fear for the future), vanity, a desire to do good work, and a desire to make money, "real money," to earn large fees for little work—not merely to eke out a beggarly hand-to-mouth existence.

The abuses arising from consultation in medical cases is of recent origin, is little known publicly, and calls for special consideration. Much of what has preceded applies literally to this practice also and need not be repeated. The average physician charges a dollar for a call on a patient and sees each patient once a day. The average serious illness does not require more than ten calls, if that many. Consultation fees in New York range from fifteen to twenty-five dollars and upwards. (The less prominent consultants charge ten dollars per consultation and the top-notchers—who keep all the money and insist on getting their full fee—charge fifty or a hundred dollars.) This means that a general practitioner treats a patients for ten days for ten dollars and has all the responsibility for the management and outcome of the case—and has to wait weeks or months for his money—whereas the consultant gets from fifteen to twenty-five dollars for one call, and gets it at once. What makes the transaction so unfair is the fact that the consultant's responsibility is usually nil and, even if more considerable, almost always ceases with his exit. Most patients do not even know the name of the consultant. Consultants lay the flattering unction to their souls that they are called in to make a diagnosis or to help the family physician. They are mistaken. They are usually called in by the family to satisfy Mother Grundy, to "do the right thing," i. e., in the event of a fatal termina-

tion to be able to say to the world that they "did all that could be done." Social vanity is another reason for calling in a consultant; patients like to boast of how sick they were and how they had to have Professor X in consultation. Some patients are never quite content unless they have been seen by several consultants. Only very, very exceptionally does a physician really need a consultant's services. For to the credit of the medical profession of New York it may be said, and truly said, that the average of the general practitioner's correct diagnoses is as high as that of the average consultant. When we consider these facts it is obvious that the consultant's fee is far too large and the attending physician's too small. Physicians and consultants realize this and try to make up the difference by fee-splitting.

A fairly common cause for calling in a consultant is the physician's desire to punish his patient for having doubted his diagnosis or mode of treatment, or for having offended him in some way, e. g., by calling in a physician behind the attendant's back. Incidentally this brings a few extra dollars into the pockets of the needy doctor, gets him into the good graces of the consultant, and even strengthens his hold on the patient and his family. The shrewd consultant, with an eye to business, very amicably pats the attending physician on the shoulder and praises his diagnostic acumen and therapeutic resourcefulness. When a physician feels that he is beginning to lose his hold on his patient, he calls in a consultant.

The most important, the commonest, and the wickedest reason for consulting with a specialist, is to enable the attending physician to get a few dollars from a lodge patient. The lodge doctor tires very quick-

ly of making lodge calls; besides, he knows that his days are numbered, that as soon as he informs the relatives that the patient is suffering from a serious illness the family will send "for a real doctor." So he takes the bull by the horns and summons a specialist. Lodge and charity patients always have money for a "professor." By means of the consultation the lodge doctor almost doubles his income—some physicians, fairly honest ones as this world goes, could not make a living without it—and, not infrequently, gets rid of his troublesome lodge patients. After a consultation it is always an easy matter to shift a patient to a hospital; the consultant's "pull" with his hospital fixes that.

How to remedy the fee-splitting evil is not of easy solution. Education, the universally lauded remedy for all ills, will not do. Our slogan here must be: "remove the cause!" And the cause is—poverty. If the physician were assured of a decent living wage, fee-splitting and other and worse evils arising from the practice of medicine as a business would not exist. Poverty is not a disgrace—nor is it very creditable, nor does it purchase food and clothing, pay rent, buy automobiles, a seat at the opera, tickets for the theater, etc. In fact, it does not even make friends, and, strangest of all, it is not conducive to increasing one's practice. With us money is the passport to good society and the good things of life. The wealthy moralist may prate of conscience, but the hungry physician—living in a country of "practical men"—soon learns the great maxim of the business man: success is not to leave it undone but to have it unknown. To secure proper scientific and humane medical services for the public, *the physician must be made a public servant and be paid from*

the public treasury. The health of the community is its most valuable asset, and the community ought to take every means to safeguard it. The Board of Health ought to employ every physician who cares to enter the public service, and untrained nurses ought not to be permitted to practice medicine. The socialization of health agencies is the first duty of an intelligent community.

Until the arrival of this millennial period when both physicians and patients will have justice done them, the adoption and enforcement of the following measures would conduce to the certain amelioration of many of the evils associated with the practice of medicine:

1. Every consultant's fee shall be fixed and ascertainable in a medical directory. I have known of consultants whose regular fee is five or ten dollars charge fifty dollars because of a "tip" by the attending physician.

2. A consultant shall always leave his card with the patient. This is to prevent substitution, and to enable the family to "look him up" in the medical directory.

3. Attending physicians shall be entitled to a special fee from the patient for consulting with a specialist. (Twenty-five per cent. of the consultant's fee.)

4. It shall be compulsory upon all hospitals to admit any patient, whether suffering from a medical or surgical ailment, upon the request of a physician. At present most of the hospitals are ready enough to admit surgical "material" for the staff to practice on. Medical cases are sneered at. All the swollen-headed young M. D.'s in the hospitals aspire to become surgeons—and get rich.

5. In surgical cases coming to operation, the attending physician shall be en-

titled to a fee from the patient of not less than 25 per cent. of the fee paid the surgeon for his cooperation with the latter during and after the operation.

6. Any consultant convicted of fee-splitting shall be expelled from all medical societies of which he may be a member and shall not be eligible thereafter to election in any medical association. After a second offence he shall be prosecuted by the Comitia Minora of the Academy or County Medical Society for the forfeiture of his license.

3681 Broadway.

THE TREATMENT OF PRURITUS ANI.

BY

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Pruritus ani is the name applied to any itching about the anus regardless of the cause, and may be a direct symptom of some local rectal disorder or a reflex manifestation of some other diseased pelvic or abdominal organ, or even a sign of serious systemic disturbance. The character or degree of itching may vary and includes all varieties of eczema. Sometimes the cause is discernible, while again it is quite obscure and in some instances there seems to be no apparent cause. The general practitioner often considers it a trifling ailment, although in old and aggravated cases it proves to be intractable and renders the patient's life almost unbearable.

It affects all classes of men and women, for it is found in all occupations and social conditions of life and occurs at any age, but is more common in males and about middle age. The itching is usually constant, with

exacerbations, when the patient's body becomes warm, it is not limited to the anus, but radiates down the limbs, over the buttocks and across the perineum to the urinary organs. Scratching and rubbing the parts gives only temporary relief and leaves after effects, such as bleeding, cracks and fissures, which add to the annoyance. In the majority of cases pruritus is simply a symptom of some other rectal or pelvic trouble and may therefore refer to any neighboring organ, though it is usually due to hyperesthesia of the nerve filaments.

Etiology.—The causes are many and sometimes very difficult to ascertain, but usually when found and removed the pruritus will be cured at once. Sometimes nothing can be found to explain the itching. Various local and constitutional conditions or habits are at times the cause, or, occasionally, neurotic affections, diabetes, portal congestion, syphilis, rheumatism, albuminuria, or a gouty tendency. Thread-worms are frequently the source in children, but rarely in adults, and can easily be found in the folds of the mucous membrane of the rectum as short fibers resembling pieces of thread. Chronic prostatitis, proctitis, impacted feces, chronic constipation and errors of diet are each at times the source. Hemorrhoids, either internal or external, ulcerations, a beginning fissure, prolapse, polypus, fistula in any variety, may be an underlying cause. In women it occurs with pruritus vulva during menstruation and early during pregnancy, or in the last few weeks of gestation when the perineum is congested and edematous.

Certain articles of food frequently produce the pruritus, as shell-fish, salmon, venison, strawberries, coffee or the over use of meats and spices. In fact, any rich diet or excess of alcohol and tobacco may cause it.

When a fistula is present, though the skin opening may be pin-point in size, still the discharge as it evaporates leaves a crust which occasions the itching. Pediculi also, by their presence and excretions act in the same way. Herpes, erythema in fleshy people from chafing and sweating of the buttocks in walking, and eczema, either acute or chronic, are each occasionally the cause of pruritus. In eczema marginata the spores may be found by the microscope in scales scraped off and moistened in glycerin. Incontinence of urine in either children or old people is many times a cause.

Symptoms.—The predominant symptom is the unbearable itching, which grows worse with warmth and rubbing of the parts. Scratching, which is sometimes controlled when the sufferer is awake, is unconsciously performed when he is asleep and causes bleeding and abrasions of the skin, which serve to make the conditions more painful the next day. In recent cases there is often nothing to see or there may be a red, glistening, perhaps edematous condition of the parts with scant serous secretion, enough to keep the skin moist. In old cases the skin becomes thick, pale and parchment-like, sometimes even brownish, especially back of the anus and toward the coccyx in the intergluteal space, and the whole surface is eroded and fissured. In protracted cases the patient's general health and nutrition fail from prolonged insomnia and nervous wear and he becomes hypochondriac.

Diagnosis.—Pruritus is easily diagnosed from the patient's history and then corroborated by the examination. The patient in the lithotomy or Sims position affords easy inspection of the whole field. The presence of syphilis, tuberculosis, and especially rheumatism as an underlying dyscrasia, must always be investigated in

obscure cases, because this fact alters the treatment.

Prognosis.—Without careful attention the outlook is very poor. Periods of improvement are quickly followed by exacerbations worse than the preceding. The itching and pain, together with the loss of sleep, bring the sufferers to the verge of nervous prostration or insanity if they have not already become opium wrecks. A patient told me that he had not had a day's peace or a comfortable night's rest in a year. He could do no business, looked and felt as though he was in the last stage of phthisis, and vowed unless I could help him he would commit suicide.

Under careful, persistent treatment you may look for a favorable future, provided the cause can be removed. The patient, however, must be told that unless the cause is purely local the treatment requires time and perseverance on his part.

Treatment.—The treatment depends, first, upon the cause, for with that removed the pruritus will usually disappear. Sometimes the cause is very trivial. I remember seeing a severe pruritus that had resisted treatment by two physicians that was due to a few inverted hairs. These were removed, the follicles destroyed and a sedative dusting powder used. The trouble healed kindly and has since never bothered the patient, who is himself a physician. If there is no apparent local cause, examine the patient's general condition. When anemia or tuberculosis is present, alteratives and tonics like arsenic, iron, codliver oil and quinine are indicated, also *nux vomica* for its tonic effect, both systemic and intestinal. The tonic value of exercise must be remembered and its importance impressed upon the patient. The diet is to be looked into and excesses cut off, as coffee, alcohol, to-

bacco and the over use of meats, spices and condiments, and also highly seasoned sauces or game. When the gastric digestion is impaired, pepsin, diastase or mineral acids may be needed. In the lower digestion the bowel or liver may need attention. The genito-urinary systems in both male and female patients must be given a thorough examination and the physician satisfied that there is nothing abnormal about these organs which might maintain a reflex excitation. The condition of the stool should be inquired into and if constipation exists the bowel should be emptied thoroughly by a saline laxative or rhubarb, after which they should be moved daily. Aloes is contraindicated as a laxative, because of its irritating effect on the rectum. The use of intestinal antiseptics, such as salol, sulphocarbolates and ichthyol, five grains of the latter given night and morning, on an empty stomach, is useful to clear up the autointoxication. Intestinal lavage, with large quantities of weak alkaline solutions, is of inestimable value in clearing out the bowel and stimulating intestinal action (the details of lavage will be considered at another time in a paper on constipation and autointoxication, because of lack of space in this article).

Syphilis occasionally produces a pruritis and eczema about the anus, but a thorough course of mercury and the iodides will remove it. If due to lithemia, the salicylates and alkalies should be freely given. As the itching is always worse in bed and while the patient is resting, the use of pajama night suits must be replaced by a cotton gown, which is loose and does not touch the perineum. The pajamas by fitting closely increase the production of moisture and increase the chafing. Cotton sheets should be worn on the bed and heavy quilts replaced by wool blankets which permit a more even

temperature and thus prevent sweating.

Local Treatment.—Locally the treatment divides itself into cleanliness, keeping the parts dry, maintaining rest by preventing friction between the sides and relieving sphincteric spasm. Scrupulous cleanliness during the local toilet is imperative. The matter of toilet papers is important. "Adler" calls attention to the fact that harsh papers and ordinary newspapers, because of the printers' ink often causes a pruritus. A patient, whom the writer attended, presented a very obstinate case of pruritus that persistently recurred until it was discovered that the sufferer used as toilet paper the tissue paper which had been wrapped around oranges and lemons. When this practice was stopped and a little local treatment given, the trouble disappeared and has never recurred. Where contact of the feces produces pruritus, the ordinary use of toilet paper is not sufficient to remove all of the small particles, and pledgets of cotton moistened in warm water are much more efficient. The addition of sodium borate or bicarbonate to the water is often of value.

In conjunction with the local applications to be described later I have made it an almost routine practice whether the cause is evident or not, to gradually but thoroughly dilate the sphincter. There is always present a hypersensitiveness of the anal mucous membrane or an hypertrophy of the sphincter muscle, both of which conditions are relieved by this procedure. The dilatation is performed slowly and without an anesthetic. By frequent moderate stretchings I overcome the hyperesthesia and abnormal resistance and in that way relieve the constipation that occurs from prolonged retention of the feces. This also relieves the tenesmus that is set up and which keeps the skin under tension and helps to make

defecation painful. It has been advised to perform the dilatation under chloroform, but I do not employ that method, because whenever you dilate forcibly there is danger of incontinence resulting, which will be more or less permanent. This mishap is never possible when the dilatation is performed by my method.

The local application of astringents and ointments, as acetate of lead or zinc, zinc oxide, carbolic acid, chloroform (a dram to the ounce of olive oil), bismuth or mercury may be tried, but with varying success unless the predisposing cause is removed. Opium is to be used very advisedly because of the possibility of inducing the habit and because the secondary effect of the drug is to produce a general itching. I have found mutton suet and diachylon ointment preferable to other emollients. The following formula I have frequently used to give temporary relief while treating the underlying cause:—

R Camphorae

Chloral hydrastisa a drams i.

Ung. diachylon ounce i.

This may be applied two or three times daily after bathing the parts. Much immediate relief is obtained by brushing the surface with nitrate of silver, twenty grains to the ounce, or with Churchill tincture of iodine, twice a week. Both applications produce some temporary pain, but the relief afterward fully compensates for the suffering.

When the pruritus is due to thread worms, injections of lime water or salt water are sufficient or, in severe cases, an anthelmintic as santonin. Occasionally this procedure needs to be repeated. When due to vaginal discharges douches of 1 to 2,000 mercuric chloride or two per cent. lysol, should be used twice daily. In infants, when due to

lack of attention during an attack of diarrhea or to fermentation of urine about the parts, I have found picric acid, ten per cent. in nitrate of mercury ointment, gives the best results.

Eczema in all its various forms is frequently a cause. If the skin is dry and scaly much benefit is derived from tar preparations. Bathe the parts with a solution of alcohol and tar water or use an ointment as:—

R Picis liquidædrams iv
Ung. belladonnædrams ii
Ac. carbolicæm. x
Adeps lanædrams ii

Bathe the parts repeatedly in water as hot as can be borne and in green soap, to remove the thickened scales and to deplete the local circulation. In exaggerated cases, a solution of caustic potash five grains to the ounce, may be used. A cloth may be used to sop the hot water on the parts, but do not allow any rubbing. This treatment on retiring will often insure a restful sleep for an otherwise tortured patient.

In the moist variety of eczema and in erythema, soothing applications such as calomel, bismuth, boric acid, starch or zinc oxide powders may be dusted on the parts and a piece of lint or muslin inserted between the buttocks. The following, as an ointment, has acted admirably in many of these cases:—

R Thymolgr. ii
Pulv. zinc steardrams iv

When the patient is about to indulge in excessive exercise, work or walking, especially an obese subject, where he is likely to aggravate the condition, he should apply the above ointment before the effort and bathe the parts promptly afterward with cold water, being careful to dry the parts thoroughly. Frequent ablutions of cold

water give much temporary relief in these cases. For fleshy individuals and others who perspire freely and are liable to chafe, carbolic acid solution $\frac{1}{2}$ per cent., or potassium permanganate 1 to 5,000, is an admirable lotion to be used daily with the toilet.

In eczema marginata, bathe the parts thoroughly with warm water and soap, dry carefully with a soft cloth and then apply dilute sulphuric acid. It is painful for a short while, but gives immediate relief. Tincture of iodine may be used. In purely neurasthenic cases, local treatment is of no use and the patient is better off without it. Moral and hygienic instruction is much more needed and in some instances straight talk, as Morris (*British Medical Journal*) calls it, will do more than all the drugs. In severe cases or when the pruritus is due to disease of the brain, spinal cord or their membranes, it may be necessary to give the patient a narcotic to enable him to sleep. Succus coni, one dram given three times daily is efficacious. Bromide or chloral is preferable to opium, as the latter causes more itching the next day.

Recently the Roentgen ray has been used in the treatment of pruritus and eczema about these parts, but the work in many instances has been done by enthusiasts and its value over estimated. Very often, but not always, the X-ray acts almost magically, but there is always the danger of possible burns even in the hands of an expert, and this danger is increased if the treatment is continued over a long period of time. It has also been found that azoöspemia may be induced unless the Roentgen ray is used very guardedly to limit the action of the light to the skin only. A fifteen minute treatment every other day for two weeks ought to show results by relieving the itching and by increasing the discoloration of

the skin. A tube of low vacuum is held about ten inches from the patient. The surrounding parts are to be protected by lead sheet and no application or ointment containing metallic salts are to be used at any time during this treatment. Nothing is worse than the empirical use of any agent and it is folly to use the X-ray on every case, without first finding the cause of the itching. The X-ray will prove a valuable assistant, however, if its use is limited to cases of unknown origin or those that prove themselves especially obstinate and where relief alone is desired. A cure can not be expected even with the use of the X-ray, unless the cause is removed. Should a cure occur, it will be only temporary if the exciting cause is allowed to remain.

When the pruritus is due to proctitis, hemorrhoids, fissure, ulceration, fistula, prolapse or polypus and the patient refuses to submit to surgical treatment, or in senile, debilitated or hemorrhagic subjects, much relief may be given by the use of the following:—

℞ Calomelgr. xxx
Mentholgr. x to xx
Vaselineoz. 1

Sign. Apply after each bowel movement bathing the surface carefully before and sopping it dry.

If there is much pain, cocaine hydrochlorate, grains ten, may be substituted (Mathews). The use of unguentum gallae or tincture of iodine will relieve the itching when hemorrhoids are the cause. These formulae have given me much satisfaction in a general way, but must be altered to suit each case. Finally, there remains a class of cases in which the pruritus persists in spite of all therapeutic treatment and where there is no apparent cause, either local or systemic. In these instances the actual cautery

applied lightly all over the irritated surface will at times effect a cure.

438 East Forty-sixth Street.

RECTAL CARPENTER WORK AND PREGNANCY.

BY

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A clinic on rectal surgery is usually amusing, the lecturer is apt to condemn the manufacture of scars and after completing his speech of condemnation he straightway proceeds to make some of the aforesaid.

There are scars and scars; their character and role depend on the personal equation and good judgment of their maker; the results of surgery would be calamitous indeed if scars were never made.

During pregnancy groups of hemorrhoids may develop and the vagina itself may take on a hemorrhoidal state, in which plight the anterior vaginal wall may protrude through the vulva and mimic a partial rectal prolapse. Were the functions of rectum and vagina identical, i. e., expulsive, and were both sphincters equally tight there is small doubt but that the veins of the latter would become dilated and form pouches.

One cause of hemorrhoids (in the pregnant woman) is a hydrostatic wedge which pries the mucous membrane away from the muscular coat, thereby stretching attachments which are none too firm. Call it a mucous sac or apply any other appropriate term to the result of increased vascularity, succulence, or dammed up secretion, but it is, mechanically, a wedge which in action is rending asunder two rectal coats, with pouching and cleavage as necessary conse-

quences. One way to forestall this progressive damage is to nail down the mucous membrane by making the elastic submucous coat a non-elastic cicatricial one, using for that purpose fine scars which might be compared to tacks or nails as used in carpentry. These tacks could be made by cauterization, by irritant chemicals, or by the indelible scar of the stitch; but there is a decided choice in ways and means when the patient's comfort and the ease of application are estimated at a fair valuation.

Carbolic-salicylic preparations are well known, their use requires neither anesthetic, nor hemostatic forceps. They may be employed and by the very process of producing scar tissue in the submucous layer all wedging action is arrested as surely as the power of a hydraulic press would cease if its cylinder were filled with cement.

The action of gravitation plus the anatomy of the structures which provide for various degrees of motility lead one to consider the wide edge of the wedge as being directed upward; therefore, the particular swelling which acts as sentinel to that spot where the mucous membrane is being pushed off the muscular coat may be a pile *in esse* or *in embryo*. At any rate insert a hypodermic needle just above it, penetrate the mucous membrane, enter the submucous layer and go to, but not into, the muscular coat. Then inject 5 or 10 minims of Shuford's solution, but do not withdraw the needle for five full minutes, and only then with a slow rotatory movement. The final result will show the mucous membrane fastened down with a nail of cicatrix where it previously bagged. Drive but one such nail a week and few will be requisite; however, drive all that are required, for in the case of a pregnant woman if the mu-

cous membrane is properly attended to, and the feces kept soft by well-known expedients, the other rectal troubles will take care of themselves.

128 W. 86th St.

THE ABORTIVE TREATMENT OF GONORRHEA.

BY

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Etc.

We come here to one of the most important questions confronting the genito-urinary specialist: Can gonorrhea be aborted? Is an attempt to abort gonorrhea justifiable? If the first question can be answered in the affirmative, it naturally follows that an affirmative answer must also be given to the second question. Gonorrhea is such a grave disease, its possible complications and sequelae are so serious and far-reaching, that a really effective abortive treatment would be a boon and a blessing and its discoverer would rank among humanity's benefactors. Unfortunately we are not yet in possession of a reliable and satisfactory abortive treatment, and it is a question if we ever will be. Not that we do not possess efficient bactericides which when brought *in contact* with the gonococcus will surely destroy it. But when the patients come to us the gonococci are no longer on the surface, on the free urethral mucous membrane, but have dug beneath the surface and are protected by several layers of epithelia from the action of the germicidal solution. We may in the future

get a preparation which will penetrate deeply into the tissues, but so far such a preparation is not yet at our command. Another objection to the abortive treatment is that it is apt, in a large number of cases, to lead to serious complications, and to leave the patient in a much worse condition than when he applied for treatment. Casper says that he has seen cases of lymphangitis, lymphadenitis, prostatitis and cystitis develop under the abortive treatment, and in such a way that there could be no doubt as to the causal relationship between the treatment and the complications. We know personally of cases where an attempt at aborting gonorrhea with silver nitrate was followed by the most excruciating pain, profuse bloody discharge, terrible strangury and complete urinary retention for twelve and twenty-four hours.

It must be conceded that the vast majority of genito-urinary specialists are opposed to the abortive treatment of gonorrhea: First, because it does not abort, except in a small percentage; second, where it fails to abort, the gonorrhea is generally aggravated; and third, it is apt to lead to painful and serious complications.

I also am opposed to it, as a general thing. And still there are special cases where we are fully justified in making an attempt to abort the disease, and in these special selected cases we are sometimes rewarded with brilliant successes. To illustrate. A. B., age 28, has had intercourse five days before, and for the last forty-eight hours has had an uncomfortable, "hot" and itchy sensation in the anterior portion of the urethra. This morning he noticed a small drop of discharge. By gentle pressure we succeed in expressing another drop, which when examined shows

the presence of numerous unmistakable gonococci. (An examination of the woman the following day shows her to be suffering with a chronic gonorrhea.) He has had gonorrhea five years before, but was completely cured, and his urine has been free from shreds. Even now the urine—not only the second but also the first portion, with the exception of the first few drops—is perfectly limpid and free from shreds. To the suggestion that locally it would be best to wait a day or two, he replies no, that he must be cured as soon as possible, for he is to get married in two weeks. The possible dangers of an abortive course of treatment are explained to him, but he is willing to take all the risks. He is then treated with protargol, by the method to be here outlined; the discharge and the burning increased at first, but at the end of five days the man is completely cured; no discharge, no gonococci, the urine perfectly clear, and the marriage is followed by no disagreeable consequences whatever.

Admitting then that there are cases in which an attempt at abortive treatment is justifiable and even indicated, what is the best method? *Silver nitrate should never be used for the purpose.* In weak dilutions it is inefficient, in strong solutions it is dangerous. Not that we may not succeed occasionally in aborting a case with silver nitrate, but the percentage of such smooth successes is so small and the danger of aggravating the trouble and causing painful complications is so great, that we have no right to use this method. Brutal and risky measures are occasionally successful, but that does not mean that we have a right to sanction them.

There are several drugs that have been used in the abortive treatment of gonor-

rhea. I have limited myself to but two, and they are protargol and argyrol. These are strong enough silver salts, but the inflammation they produce is not strong enough to result in healing with cicatricial contraction. Now for the method:

The patient urinates and the *anterior* urethra is gently washed out with about four ounces of warm normal salt solution (7:1000). No force must be used, and not more than a dram or two of solution should be at any time in the urethra (so as to prevent any fluid from opening the cut-off muscle and penetrating into the posterior urethra), and the meatus should not be tightly closed by the tip of the syringe, so that the fluid may flow freely back. A few drops (5 to 10) of a 4 per cent. solution of cocaine, eucaine or alypin are then instilled into the urethra. One dram of a 2 per cent. protargol solution is then injected, and by closing the meatus with the fingers held in for five minutes. In three hours a dram of a 1 per cent. solution of protargol is injected and held in for three minutes. This injection—1 dram of a 1 per cent. protargol solution held in for three minutes—is repeated every two hours, until four injections have been given. The next four injections, at three hour intervals, are given with one-half per cent. solutions; and the next four injections, also at three hour intervals, are given with one-fourth per cent. solutions. If we use argyrol, the method is the same, only the strength of the solution is different. The initial solution is 50 per cent. and the subsequent solutions 25 or 20 per cent.

The protargol and argyrol solutions may also be used alternately. I have so used them recently and with very good results.

The discharge is examined for gonococci every day. At the end of two or three

days we know what we may expect. If the abortive treatment proves successful and the gonococci have disappeared or are becoming less and less, well and good. If not, then also well, though not so well; at any rate we have not hurt our patient, and we may then proceed with the regular treatment of acute gonococcal urethritis.

When not to attempt the abortive treatment.—While there are differences of opinion among urologists as to whether abortive treatment should ever be tried or not, there is practically no difference of opinion as to when it should not be attempted. All agree that abortive treatment should not be attempted if the discharge, no matter how scanty, has lasted longer than forty-eight hours; nor if the discharge is profuse and purulent, no matter of how short duration; nor when the meatus is red, puffed and swollen; nor when the glans are turgid; nor when there is considerable burning on urination; nor when there are the slightest signs of strangury; nor when the patient is suffering with painful erections or chordee. It is too late then to attempt abortive treatment, and that's all there is to it; and besides all the patient's symptoms are almost sure to become greatly aggravated.

12 Mt. Morris Park W.

Ingrowing Toe-Nail.—Good results in the treatment of ingrowing toe-nail may be obtained by dusting the affected part with a little powdered lead nitrate, after careful cleansing. A white scab forms, which must be removed on the following day; otherwise, pus is liable to collect underneath, the dusting being then repeated. The same treatment is followed from day to day as long as necessary. Liesching has been using this method for many years, with satisfactory results.—*Liesching*.

ANALYSIS OF MOTHERS' MILK.¹

BY

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The purpose of this discussion to show the methods of ascertaining the chemical composition of milk, causes us to refer to the different constituents in detail.

The ordinary composition of milk from a microscopic view shows it to consist of a liquid portion (plasma) containing a conglomeration of minute fatty globuli which on standing form cream. This contains milk fat, composed of neutral fats, stearin, palmitin, olein and small amounts of butyric and caproic acids, slight traces of fatty acid compounds, lecithin, cholesterol and yellow pigment. The milk plasma is a solution of the inorganic salts and important carbohydrate and proteid compounds. The chief carbohydrates in milk are milk sugar and lactose, casein, a nuclealbumin, lactoglobulin, which is similar to paraglobulin of blood; lactalbumin, resembling closely the serum-albumin of blood; the latter two occur in smaller quantity than casein.

Hammarsten² isolated a nucleo-glyco-proteid from mammary gland, which appears to have the possibility of being the parent substance for both lactose and casein of the milk. The mineral constituents are varied and quantitatively show an interesting relationship to the mineral constituents of a suckling's body.

The quantitative composition of the milk is widely different from that of the blood and therefore it was used to show that it is not derived from it by simple filtration or

dialysis but that the different elements are secreted by the epithelial cells of the gland. There are other traces of nitrogenous excreta found in the milk plasma, such as urea, creatin, creatinin, also lecithin, cholesterolin and small amount of citric acid as calcium citrate.

The analysis of milk, if made correctly is a valuable asset to the physician, as well as the nurse. The technique is varied. Some prefer the approximate analysis, some the gravimetric. The first and the most important step, is to collect samples properly for the analysis. In my experience the specimen should be collected, a little at different intervals into a sterile container to make up at least 100 c.c. in total for 24 hours. The receptacle should be kept in a refrigerator because adding of preservatives interferes with the analysis.

Now to the analysis proper:

The milk is mixed thoroughly by pouring back from one beaker to another until perfectly homogeneous. Specific gravity is determined by means of Westphal balance at 15° C.

For approximate determination of fat a somewhat modified Babcock test is applied in our laboratory, viz.:

A specially constructed centrifuge tube is used; same is filled first with 5 c.c. of milk, then 5 c.c. of a mixture of equal parts glacial acetic acid and hydrochloric acid 1.2 specific gravity, kept on water bath heated to 60° C. for 20 minutes, centrifuged for five minutes, filled with hot distilled water to mark on graduated neck, centrifuged additional 5 minutes, placed on water bath again for a few minutes and finally percentage read off from graduated neck of the tube.

The gravimetric method, which is the more correct one, is conducted as follows:

¹Read before the Northwest Branch of the Chicago Medical Society.

²*Zeitschrift für physiologische themie*, 1894 Bd. xix. S. 19.

About 5 c.c. of milk are absorbed by a tared Adams milk fat coil, consisting of a fat free filter paper roll, suspended from a wire, weighed, dried in an air oven by a heat not exceeding 100° C., then it is weighed again, total solids determined by difference, placed in a Wiley continuous extractor and extracted with ether for 6 hours continually. After evaporation of the ether the fat is weighed, then dried and calculated from the original weight.

Total proteins are determined by the well known Kjeldahl method, the amount of nitrogen being multiplied by 6.38.

Casein and albumin are determined by Leffman and Beams modified method. Twenty c. c. of milk are saturated with magnesia sulphate solution, and the mixture saturated with salt. The whole is washed into a graduated cylinder, allowed to settle, an aliquot part of the clear liquid withdrawn, filtered, precipitated with tannin, filtered again and albumin determined from precipitate (tannalbumin) by Kjeldahl method.

Casein is calculated by difference between total proteins and albumin. Milk sugar is determined gravimetrically by Fehling's process. Amount Cu Ox 0.6024 = sugar. Ash is determined, by incinerating the dried total solids of a given amount until perfect white ash forms.

Ash consists of, according to Soldner:

Sod. chloride NaCl	10.62%
Pot. chloride KCl	9.16%
Mono potass. phos. KH_2PO_4	12.77%
Di potass. phos. K_2HPO_4	9.22%
Pot. citrate $\text{K}_3 (\text{C}_6\text{H}_5\text{O}_7)^2$	5.47%
Di mag. Phos. MgHPO_4	3.71%
Mag. citr. $\text{Mg}_3 (\text{C}_6\text{H}_5\text{O}_7)^2$	4.05%
Di calo. phos. CaHPO_4	7.42%
Tri calo. phos. $\text{Ca}_3 (\text{PO}_4)^2$	8.90%
Calc. citr. $\text{Ca}_3 (\text{C}_6\text{H}_5\text{O}_7)^2$	23.55%
Lime comb.with proteids	5.13%

After Leach:

Pot. oxide	25.02%
Sod. oxide	10.01%
Calc. oxide	20.01%
Mg. oxide	2.42%
Iron oxide	0.13%
Sulph. trioxide	3.84%
Phos. pentoxide	3.84%
Phos. pentoxide	24.49%
Cl.	14.28%

Bacteriological examination is made by diluting 1 c.c. of the milk with 1 L. of sterile water and put on suitable cultures. Bacterial count is then made, figuring colonies from given amount of the diluted milk viz.: 1 c.c. = 1,000 parts 1 colony grown from 1 c.c. = 1,000 bacteria per 1 c.c. milk.

A URINARY TEST FOR SYPHILIS.

BY

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Instructor in Diseases of Children in the New York Post-Graduate Medical School and Hospital.

AND

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Different attempts have been made to modify the Wasserman complementary syphilitic test by Noguchi, Hecht and others, but up to the present day none of them have been very successful and laboratories generally apply the original Wasserman method.

Landau, Scheurman, and several other investigators have done considerable work in formulating a method whereby they use blood-serum and pure stable chemicals, such for example as Scheurman's lactic acid, as antigen, etc.

The following method uses no serum of the luetic patient but only the fresh voided urine for the diagnosis of syphilis.

The reagents used are simple and easily prepared so that the limit of time is reduced from one-half to three-quarters of an hour to complete the test for a diagnosis of syphilis.

It has been proven by numerous experiments that potassium iodide and iodine solutions generally are similar to tuberculin in their reactions and especially the luetic serum to the iodine preparations.

Carcinoma, syphilis and tuberculosis can be easily differentiated by this method. In fact any kidney lesion down to Bright's disease can be easily detected and diagnosed by the iodine compounds eliminated in 24 hours, as our own liver and skatol test. (*The Post-Graduate*, Sept., 1914).

The cancer test where a 1-10 iodine solution is used shows the sulphur and decomposed fibrin compounds as constant factors for the diagnosis. (*The Post-Graduate*, August, 1914. "Test for Carcinoma and Sarcoma.")

In syphilis the decomposed fibrinogen compounds in connections with the lecithines are to be looked upon as the causative factors of the disease.

Therefore, carcinoma is an essentially protoplasmatic disease where sulphur is predominant in the form of cystin and taurin of liver and blood.

Syphilis is a nucleolous disease where the phosphorus is most predominant in connection with the sulphur and lecithines and blood.

This briefly explains a number of etiological facts which otherwise would unnecessarily increase the length of this article.

As a fundamental axiom we have assumed that all morbid or pathological conditions are reflected in the urine.

As a means of positive diagnosis the microscope has during the past few years

been a very useful and important factor. For accuracy chemistry is more exact and more scientific. The next decade will see biological chemistry explaining many dubious theories and also controverting some already accepted ones. The medical man working in conjunction with the chemist bids fair to produce the next important discoveries in determining the true nature and the rational management of disease.

It is understood that disease produces destruction of tissues, toxins or waste products, whatever we may wish to designate the end results. It is equally true that the excretions as the urine, feces, bile, glandular secretions, blood and the various exudates must be modified by, or contain these changes. It is the business of the chemist, more especially the biological chemist, working in conjunction with the clinician, to work out, to tabulate and to formulate these modifications from normal conditions.

It is owing to the fact that this is not a lucrative field for the chemist that so little has been accomplished. The medical investigator must consider the chemist his complement. Thus working together they will be useful to each other and accomplish much.

It has been our endeavor to study the urine both from healthy and from the pathological subject to compare the chemical facts and the clinical observations.

In August, 1914, in *The Post-Graduate*, we published some chemical observations which we noted while studying the urine and excretions from some cancer cases. The following are some chemical reactions noted while studying the urine from syphilitic cases. The reactions are chemical ones, therefore most exact and yet so simple that even a medical man inexperienced in laboratory work can complete them.

To make an exact positive diagnosis of syphilis from the urine, to be able to do this in a few minutes in your own office and by medical men who have had little or no laboratory training will be of great aid to the profession.

The reaction is apparently based on the nuclein found in the urine or rather the derivatives obtained from broken down or decomposed nuclei or nucleoli. A dilute solution of phosphoric acid will give the same color reaction with the reagent. Well-known investigators have stated that the nuclei contains phosphorus. It is also recognized that the alkalis dissolve the nuclei. The smallest amount of alkali decolorizes the reagent.

The reactions corroborate our contention that syphilis is essentially a disease affecting and destroying the nuclei or the nucleoli; while malignant disease causes a destruction of the plasma and a breaking down of the fibrin, as shown by the changes observed in the sulphates—cystin and taurin, which are converted into sulphates. Decomposed fibrin will give the same chemical reactions, i. e., the absorption of iodine from an aqueous solution similar to the sulphites seen in the urine from a malignant patient. Also ammonium sulphide added to a normal urine produces a flocculent precipitate; when added to the urine from a malignant patient it remains clear.

METHOD OF DETERMINING SYPHILIS FROM THE URINE.

Reagents used.

(a) One gram of sublimated iodine powder dissolved in 100 grams of carbon-tetrachloride.

(b) One-tenth normal iodine solution made according to U. S. Pharmacopœa, page 549.

(c) Solution of phosphoric acid, di-

luted to equal one-tenth of the strength of the stronger acid.

(d) Several test tubes and a small graduate.

Note.—In place of tetrachloride, chloroform, dichlorethylen, trichlorethylen or pentachlorethylen may be used but tetrachloride or chloroform are more satisfactory. If chloroform is used it should be freshly prepared owing to the fact that it is unstable.

The urine to be examined should be an early morning sample voided before breakfast and before drinking much fluid, should be filtered if not clear, the albumen and phosphates precipitated by boiling if present; the sample should be acidulated with acetic acid or phosphoric acid if alkaline.

To 6 c.c. of the above urine is now added 1 c.c. of a 1 per cent. iodine solution of carbon tetrachloride and well shaken (sidewise and horizontally) for two to three minutes.

A sample of normal urine should be used in another test tube for comparison and treated with the iodine solution of carbon tetrachloride as above.

In active syphilis or luetic lesion the iodine tetrachloride (lower layer) retains after thoroughly shaken a beautiful pinkish or purplish red color, whereas the normal specimen shows no coloration whatever in the lower layer.

PRECAUTIONS TO BE OBSERVED.

It is best to make three different tests for an accurate diagnosis especially when arsenic, mercury, iodine, phosphorus or 606 medication has been used.

No. 1. First make a comparative test as above.

No. 2. To this first comparative test is further added 3 to 4 c.c. of a one-tenth iodine solution, U. S. P., and well shaken. If then the lower layer of carbon tetrachloride still remains clear in both specimens, no luetic lesion is present.

No. 3. To the first comparative test to which you have added 1 c.c. of the iodine carbon tetrachloride reagent is now added .5 to 1 c.c. phosphoric acid solution (1:10) and well shaken. If both specimens become decolorized no syphilis condition is present.

The second and third additional tests only become necessary whenever mercury, arsenic, 606, etc., have been used as medication. In all three of the comparative tests made the iodine carbon tetrachloride (lower layer) should become decolorized if syphilis is absent.

The color in the above test when syphilis is present ranges from a pale pink to a deep red color corresponding to the positive or doubtful condition of the disease and its severity and activity.

Caution: This test can be relied upon as accurate provided the following conditions are observed;—owing to the fact that drugs and food are soon detected in the urine and therefore modify the chemical reactions the sample of urine to be examined should be a morning specimen voided before breakfast, and the patient should avoid the use of drugs the night before.

A SIMPLE INSTRUMENT FOR THE DETERMINATION OF IMPENDING DIABETES.

BY

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New York.

Sometime Professor of Clinical Diagnosis, Loyola University, Chicago.

A new urinary test with promising possibilities has recently been mentioned by a German writer. As it appears that it may come into quite general use, I have worked out a handy instrument which will facilitate the application of this test in the hands of general practitioners. The fundamental idea of this "diabetes indicator" as it has been called, is similar to that of several other instruments for facilitating certain urinary tests, which I have described elsewhere.¹

A brief consideration of the importance of this test may with advantage be outlined here. Bergell, of Berlin, has made a number of experiments in the laudatory attempt to work out a way of sensing a predisposition to diabetes, and seems to have found a means of establishing, in a more or less definite manner, certain signs of a metabolic change which serves as an indication of the impending onset of this condition or, at least, a tendency in this direction. In a recent communication (*Vorstufen des Diabetes*, *Deut. med. Wochenschr.*, xl, ii, 2094, 1914) he reports the results of a series of tests he has made, and concludes that by his method it is possible to differentiate between healthy urine and that of diabetes, *as well as that of those who may develop this disease later*. This writer has made quite a large number of tests, and states that the application of this test to the urine of children of diabetics brings out the remarkable fact that the reaction is positive in eighty per cent., thus uncovering a metabolic defect in such individuals that is evidently quite common and of considerable importance. We cannot discuss here the hereditary aspects of diabetes, but desire to emphasize the prophylactic value of this procedure, by bringing to light conditions related to diabetes which may correspond to certain well known premonitory signs which precede other disorders. Of course this also makes possible the application of aggressive prophylactic treatment, instead of the usual curative measures, which are rarely instituted until the disease has established itself and is conse-

¹1, A New Instrument for the Rapid and Accurate Estimation of Albumin in the Urine, *Jour. of A. M. A.*, li, 1511, 1908; 2, The Estimation of Indican, *Amer. Jour. of Clin. Med.*, xv, 1296, 1908; 3, A New Instrument for the Estimation of the Urinary Acidity, *New York Medical Jour.*, lxxxix, 24, 1909; 4, A Handy Instrument for Office Titration Work, *Amer. Med.*, vi, 546, 1911.

quently no longer easily controlled.

My instrument consists of a graduated glass tube arranged so that the necessary quantities of urine and the two reagents may be measured and mixed without recourse to the cumbersome and more easily broken pipettes.¹

The test is slightly more complex than that for the urinary acidity with my acidimeter, but nevertheless is quite simple, and the two minutes taken to accomplish it will be time well spent. The technic of the test is as follows: Fill the tube exactly to the mark U with twenty c.c. of urine, the specific gravity of which has been previously reduced to a constant figure (1012 is the figure recommended by Bergell). Emphasis is laid upon the fact that the urine should be diluted *immediately* before it is tested. Next add seven c.c. of a fifteen per cent. solution of sodium hydroxide to the mark Na, and then fill the tube to the mark Cu with three c.c. of a stock copper solution containing 138.78 grams of copper sulphate reagent in each liter. Shake this vigorously for ten seconds and filter into a series of three test tubes of uniform bore. Average specimens manifest a slight greenish tint, while those which show a positive reaction are definitely colored blue, the degree of responsiveness being comparatively estimated by the depth of the color, in exactly the same way that the degree of indican is determined.

Three cautionary suggestions should be mentioned: 1, an ounce of grape sugar given to a healthy person sufficiently long before the test to be absorbed and eliminated, will bring about a temporary positive

reaction; 2, one had best not depend upon filling the tube to the three separate marks direct from the vessel or bottle, but fill it nearly to the line with the indicated fluid and then add with a dropper sufficient to make it exactly reach the line (on accustoming oneself to accurate pouring it

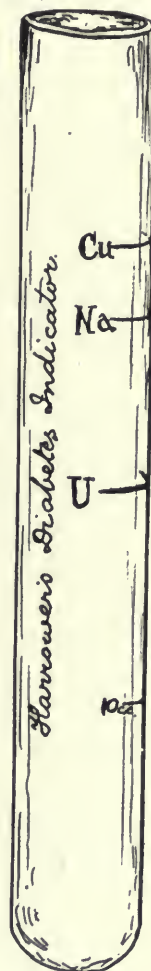


Fig. 1. Harrower Tube for the Detection of Impending Diabetes.

is easy to dispense with droppers); 3, the first few c.c. passing through the filter should not be judged, i. e., the second and third tubes are alone to be considered. As with the majority of color reactions, it is advisable to make a control with a specimen known to be normal, for comparative purposes.

¹As has been explained in communications already mentioned, my acidimeter and other instruments are not intended to supersede burettes, pipettes and other laboratory paraphernalia, but rather to favor compactness, portability, and the convenience of those in everyday practice.



THE ANNOTATOR

Typhus, the Scourge.—War and pestilence go hand in hand, and although in France and Belgium, disease has been notably absent, on the Eastern front the contrary is the case. Some time ago it was announced that cholera was rife in the Austrian and Russian armies, and now the fact has been established beyond the shadow of a doubt that



typhus fever is rampant in Serbia and Montenegro. According to German accounts, typhus fever is also raging in the Russian armies, and although the efficient methods of the German Medical Staff will prevent its gaining any headway in the German armies, the danger is a very grave one.

As far as is known, however, the chief center of typhus fever is in Serbia, in which country it is sweeping through the land with the violence of a tornado. For some time efforts have been made to stem the tide; several groups of medical experts have been sent to Serbia by England, and now the American Red Cross has organized a sanitary commission composed of Drs. T. W. Jackson, Hans Zinsser, B. W. Caldwell, A. W. Sellardo, Geo. C. Shattuck, F. B. Grinnell, W. S. Standifer, Luis de la Pena and Richard P. Strong that will proceed to Serbia to aid in stamping out this disease. The expenses of this commission are to be shared by the American Red Cross and the Rockefeller Foundation.

It is, therefore, peculiarly fitting at this very time not only that Dr. Plotz's discovery of the germ of typhus should have been thoroughly substantiated, but also that he, with the aid of his associates of the pathological department of Mt. Sinai Hospital has been successful in evolving a protective vaccine against the disease.

It seems to be agreed, therefore, that Dr. Plotz's isolation of the pathogenic organism of typhus fever is one of the most important contributions to modern medicine and it is particularly gratifying that his preliminary report made last year is now freely accepted by such prominent men in the medico-scientific world as Drs. William H. Welch, Hidayo Noguchi, Samuel J. Meltzer, Nathan E. Brill, William Hallock Park, F. S. Mandelbaum and E. Libman.

As we stated in last month's issue it has generally been thought that with the exception of some sporadic cases in certain notoriously insanitary parts of the world, typhus was practically extinct. Time was when it was common everywhere, but this was before the days of advanced sanitation. Typhus fever may be aptly termed a dirt or filth disease, and can only continue where bad sanitary conditions prevail. Of course, as a result of the war in Serbia everything has been disorganized and the entire population has been forced to live in ways that make the spread of the disease most difficult to control. The germs are carried by vermin—body lice—and under the existing state of affairs it is practically impossible to avoid them. The great menace of the disease can readily be seen, therefore, and in spite of the splendid efforts of the sanitary experts who are fighting to control the situation the civilized world is confronted by the greatest danger of pestilence it has known for many years. There is practical certainty that the disease will be brought to this country, and although our quarantine officers are among the most vigilant and efficient in the world, it is sincerely to be hoped that the protective vaccine made possible by the discovery of the typhus germ will come up to the expectations of its advocates. It is significant that some members of the Amer-

ican Commission en route to Serbia were inoculated before leaving, but Dr. Mandelbaum rightly insists that no guarantee at the present time can be given as to its efficacy. Indeed, its protective properties must be tested in Serbia where the disease is not only epidemic, but to be found in its most virulent form, identical in every way with the old fashioned typhus fever which has always been recognized as an especially deadly disease.

We would be lacking in national pride if we did not feel some elation that the germ of typhus and a protective vaccine have been discovered by an American physician. Such a brilliant achievement is especially noteworthy in view of the youth of Dr. Plotz—he is only twenty-five years old—and leads us to anticipate much from him in the field of research as the years go by. He and his co-workers in the Department of Pathology of Mount Sinai Hospital are to be congratulated upon such a successful culmination of their labors in the interests of science and the human race.

Penurious Health Legislation.—The average politician is like the Heathen Chinee, "his ways are peculiar." In no way



recently has he given greater evidence of the "peculiarity" of his ways than in the introduction of certain bills into the New York Legislature, the object of which is undoubtedly to hinder, if not to nullify the work of the

present efficient Health Commissioner, and to render the new sanitary code of little avail. Ever since the initiation and establishment of the New York State Public Health Council, under the able leadership of that pioneer of public health reform, Dr. Herman Biggs, the intelligent citizens have been congratulating themselves on the bright future for public health in the State promised by the new sanitary code. The introducer of the bills to amend the new health laws may not have any selfish purpose, but his acts certainly do not seem to

be characterized by statesmanship or even common sense. It may not be amiss to refer to these amendments in detail. Thus the first is objectionable for the reason that it is an insidious attempt to deprive the State of the valuable services of Dr. Biggs by requiring the Health Commissioner or head of the Health Council to "devote his entire time to the duties of his office." In taking his position Dr. Biggs expressly stipulated that he should be privileged to attend to his private practice. In view of the salary paid Dr. Biggs, the State could hardly refuse, and the splendid work he has done as head of the Council leaves no reason for questioning the arrangement.

The second bill proposes to reduce the number of sanitary districts from a minimum of twenty to a maximum of ten and, moreover, sets the salary of the sanitary supervisor of each district at a maximum of \$2,500.

The third amendment makes optional instead of mandatory, the establishment of divisions in the State Department of Health, giving the Commissioner the power to increase the number of these divisions, to consolidate them, or to change the name of any division at his pleasure. The fourth amendment takes away from the Public Health Council its power to define the qualifications of directors of divisions, sanitary supervisors, local health officers, and public health nurses appointed hereafter. Finally, the fifth aims to strip the Public Health Council of the power to establish sanitary regulations, delegating this to the Legislature and even going so far as to abolish the present sanitary code unless it shall be approved by the present Assembly. It cannot fail to appear to every thinking physician that of these bills those that are not reactionary and bad are wholly unnecessary. Unfortunately three of these bills have been passed by the Assembly, and since they are bound to hamper the work of the State Health Department and render abortive its past labors, it may rightly be asked what really is the object of this retrograde policy? If it is based on economic reasons, it is indeed false economy, from every point of view. Surely such juggling with the health of a great state will not commend itself to the intelligence of its self respecting citizens. Disraeli once said

"*salus populi suprema lex*," and no truer words have ever been spoken. To save the lives and promote the health of the people is the soundest economy, and if these questionable amendments are for no other purpose than to play politics—as not a few are beginning to suspect is the case—then the Legislature and the Governor have been guilty not only of a serious economic blunder, but also of a grave sin against the entire people of the State of New York.

It is now announced that Governor Whitman has stated that as long as he is governor Dr. Biggs will stay in office, and it is also gratifying, as representing the general opinion in the State, that protests from every quarter have come to Albany against the Hinman bills. The community at large is beginning to recognize the desirability of a firm public control of health matters, if for no other purpose than to keep them from the machinations of the politicians.

Man's Inhumanity to Man.—Our readers are doubtless familiar with the treatment meted out some few years since by our Federal and State authorities to an unfortunate man named Early who was said to be a leper. For years he had been a private in the United States Army and had served in the Philippines. Upon his return and somewhere near



the time of his expected honorable discharge, this man was declared a leper and isolated. Physicians examining him were not all in accord with this diagnosis, as great an authority as Dr. L. Duncan Bulkley declaring that his disease was not leprosy; nevertheless the man was deprived of his liberty because of the fear that he would spread infection. Instead, however, of caring for him in a rational manner, and placing him under conditions that would permit of his scientific observation, he was confined in freight cars and otherwise inhumanly treated. Until he came into the hands of a few intelligent officials who gave his case common sense attention, his

lot was a most unhappy one. His treatment gave an excellent example of what red tape and officialism sometimes have to answer for. Another case of somewhat similar character has been engaging the energies of our officials recently. This unfortunate man came to this country from Brazil in May, 1912, and settled in Florida where after a few months' residence he lost his savings. Discouraged and despondent he decided to return to Brazil, but suddenly developed symptoms of insanity. Thereupon, since he had lived here less than three years, the Federal authorities seized and handed him over to the ship company that had brought him here and ordered his deportation as a defective alien. He was taken back to Brazil only to be refused admittance there for the same reasons. Since then he has covered 34,000 miles between the United States and South America. A veritable Wandering Jew, his mental condition seemed to condemn him to a hopeless life of captivity, a victim of red tape and denied the expert care which might have cured him of his malady. Fortunately, according to the *Survey*, on his return from what was destined to be his last enforced trip to the southern terminus of the ship company, his mental state began slowly to clear. After a while it was found that he could speak Spanish, Yiddish, German and a little English. Gradually, aided by persistent questioning, he little by little recalled matters prior to his illness—the name of his birthplace, his business in Brazil, his membership in the Knights of Pythias lodge in Florida, the loss of his money, and the long mental blank.

This, continued the *Survey*, indicated that his insanity had developed after his landing here, and gave the officers of the Hebrew Immigrant Aid Society and Lodge something to build on in gaining a hearing from John B. Densmore, acting Secretary of Labor. Their cooperation resulted in an order received only just in time to release Cohen from his outward bound prison, under bond to the government, placing him in charge of the Society through which it is hoped he will have care and treatment that may strengthen his enfeebled faculties until he can be safely transported to Russia.



CORRESPONDENCE

SOME REMARKS ON RADIUM.

To the Editor
AMERICAN MEDICINE,
New York City.

"He that hath knowledge spareth his words and a man of understanding is of an excellent spirit."

"Even a fool when he holdeth his peace is counted wise and he that shutteth his lips is esteemed a man of understanding."

Proverbs XVII, 27 and 28 fit my case exactly for I have no knowledge and am unable to spare these words and I, poor fool, cannot hold my peace, nor do I care to shut my lips and be esteemed a man of understanding.

God knows I am sick of reading lay press drivel regarding radium therapy in relation to cancer. It seems to me it's about time for the medical profession to settle a few salient points regarding radium, and to establish for it a definite place in therapy as a useful, harmful or inert agent.

We know what X-ray will do in cancer, we know its value and have an idea of its limitations: so with caustic pastes, fluids and the knife. Let us now scientifically investigate radium.

I am enclosing herewith a typewritten copy of a newspaper article pertaining to the report of the New York State Institute for the study of malignant diseases at Buffalo, wherein they recommend the use of the X-ray in the treatment of cancer rather than radium.

In this connection, I beg to say that such articles as these are highly injurious to radium therapy, particularly in view of the fact that this one seems to be false. While it is a fact that the European War may have some influence on the activity that was displayed in Germany, France and England, prior to the war, at the same time, there is now being conducted the same clinics as were in operation when the war started.

Furthermore, since the war started, I am informed that radium has been delivered to the City of Manchester, City of Sheffield, City of Northampton, City of Middlesex Hospital, Greenwich Hospital, Hull Royal Infirmary and Swansea General and Eye Hospital. All of these are located in the British Isles and the material

was delivered in the months of September and October. Furthermore within the past two years, radium has been delivered to the Harvard Cancer Commission, George Crocker Research Fund, University of Pennsylvania, General Memorial Hospital of New York and its Cornell Medical College connections, Battle Creek Sanitarium and many other well known institutions. There are fully seventy-five surgeons of prominence throughout the United States such as Dr. H. A. Kelly, Dr. Robert Abbe, Dr. Joseph Bissell and Dr. Bainbridge who are using radium, I think, with ever increasing success. Baltimore has just announced the equipment with radium of The James Buchanan Brady Urological Institute and in sufficient amount to carry on an elaborate experimental work.

From the great radium clinics situated in Vienna, Berlin, Paris and London reports give us full assurance that their radium research investigations are bringing us fast to an understanding of dosage that will permit greater percentages of success to be announced in the near future. The last report of the London Radium Institute shows remarkable gains in the percentage of its clinical cures over the report of a year previous and it is due to such achievement that we find the municipalities of the larger cities of England purchasing large quantities of radium for the treatment of their cancer patients.

Such rumors as are spread in this newspaper article seem to be refuted by the fact that since the war broke out over four grams of radium have been shipped from this country directly to the great clinical centers of the countries affected. That New York State with its nine thousand deaths each year from cancer attempts to treat even experimentally with so small amount of radium as fifty milligrams and it is content to confine its investigations only to the X-ray is much to be deprecated. I think evidence of conclusive type is placed before the medical profession of the world, in the fact that radium has an acknowledged place superior to the X-ray treatments in the many cancerous conditions, and its further use in inoperable cases classed as hopeless should be understood and encouraged for the great relief that comes to those distressing symptoms of pain, hemorrhage, odor, etc. When certain leading members of the profession itself really appreciate

the place of radium in the treatment of malignant conditions it is difficult to see why the New York State Institution for the study of malignant diseases is content to neglect one of the most important phases of treatment that needs closer study of research organizations. Further investigations are apparently necessary for there is still the skeptic in the ranks.

Has the work of Cameron been in vain? Are the "headliners" of our profession: the Mayo's, Kelly, Bainbridge, Bissell, Abbe, the kind of men to throw away their good money on an inert, valueless mass? Surely these men are getting results and if they are it certainly should place radium beyond the skeptic stage. The profession as a whole are somewhat at sea. I am sure some of us lesser lights would enjoy being taught facts.

In a recent interview with Dr. Cameron he stated to me that the trouble was not with the radium but with the "radium technique." Let us get away from lay press publicity as to the merits of radium and investigate it purely from the standpoint of its relation to disease and science.

May I suggest, then, that you name a committee of physicians to investigate the work being carried on in Europe and America and in due time bring their conclusions to the attention of the American practitioner. Let us know basic facts and if there are no basic facts let us know.

In closing this lengthy letter may I also suggest Professor W. S. Russel as one of the committee. I am sure he is exceptionally well qualified to act.

Thanking you for your consideration in this matter and with high regard believe me,

Very truly yours,

NORMAN BARNESBY, M. D.

Newspaper report referred to in above letter.

Urge State to Use X-Ray for Cancer Treatment Rather Than Radium.

Report of State Institution declares Science is at Standstill on account of War.

Albany, January 14.—Treatment of cancer by X-ray rather than radium while the European War is raging is urged today in the annual report of the State Institution for the study of Malignant Conditions at Buffalo, presented to the legislature.

"Before the War" says the report "there was great activity in the use of radium and X-ray development in cancer treatment in Germany as well as in France and England. The immediate result of the war is the practical cessation of all activity, and great advances which might

have been expected will be lost for the time being and possibly never recovered.

The medical resources of these countries will be taxed to the utmost, and under the present conditions the study of cancer and allied diseases will be neglected. For this reason, for the next few years, greater responsibilities will be placed on research institutions in neutral countries, especially in the United States. This responsibility is America's opportunity.

The institute owns fifty milligrams of radium, barely sufficient for experimental purposes and has therefore, confined itself to X-ray treatment.

"The outlook in this field," says the report, "is most encouraging."

PROSTATIC ATROPHY AND MUMPS.

To the Editor:

AMERICAN MEDICINE,
New York City.

The close connection between the parotid gland and the testes is well known. That an attack of parotitis may result in atrophy of the testes, in aspermia or azoospermia with complete sterility is also well known. Hardly known, however, is the connection between the parotid and the prostate, and still less known is the fact that an attack of parotitis may cause atrophy of the prostate without apparent involvement of the testicles and the spermatogenic function. The sterility may, however, be just as absolute nevertheless, for a normal prostatic secretion is an important constituent of normal seminal fluid, and its absence seems in many instances to be alone responsible for the lack of fertilizing power of the latter.

The writer has had seven cases of partial or complete (so complete that not a vestige of prostatic tissue could be made out) atrophy of the prostate, in which an antecedent parotitis seemed to be the sole etiologic factor; in some of these cases (five) the atrophy was accompanied by atrophy of the testicles; in two the testicles seemed to be unaffected. These interesting cases will be reported in detail later on. But the object of these lines is to call the attention of the profession to the connection between the parotid and the prostate and to ask them to report either in the pages of your journal or to me directly, any cases of prostatic atrophy in which parotitis was the positive or probable etiologic factor.

The relationship existing between far distant glands, organs and tissues and the genital organs forms a fascinating field of study and research.

Respectfully,

WM. J. ROBINSON, M. D.

MODERN REMEDIES

Conducted under the editorial supervision of Dr. John W. Wainwright.

Tribromonaphthol.—This agent has been designated a semi-specific disinfectant. It exerts no influence of leukocytosis and is practically nontoxic; is nonirritating when applied to wound surfaces, yet an antiseptic and cell proliferant. It is free from odor, but is unstable. Dr. Ziegler regards it a germicide in 1 per cent. solutions while in higher dilutions it inhibits bacterial proliferation; is a good hand disinfectant as well as in sterilization of the operative field of the skin before surgical procedures in which cases it is used in 5 per cent. solutions.

Strophanthin in the Insomnia of Cardiac Insufficiency.—Frankel (*Therapie der Gegenwart*, May, 1914), declares that as a result of a study of the various measures for the relief of insomnia in heart insufficiency, the intravenous use of strophanthin is the most effectual agency available, especially when sleeplessness is a pronounced complication. This procedure proved more reliable in his experience in cardiac asthma than any form of digitalis administered orally. Frankel declared that morphine should never become a routine treatment for insomnia of chronic heart disease until cardiac tonics have proven insufficient.

The Desiccation Method.—William L. Clark states in *Journal American Medical Association*, September 12, 1914, that heat effects as applied to living tissue range in degree from simple hyperemia to carbonization. Somewhere between these extremes there is a point the effect of which is more than hyperemia and less than carbonization, which is called the desiccation point. If

this accurate caloric degree is produced, controlled and sustained it will cause rapid dehydration of the tissue desired to be devitalized, rupturing the cell capsule and transforming it into a dry mass; in other words, just enough heat is generated to destroy tissue without actually carbonizing it. Substances such as soap, potato and tissues, cadaveric and living, may be desiccated through a sheet of white paper without charring or discoloring the paper, and the transformed matter pulverized between the fingers. The correctness of the desiccation principle has been acknowledged by physicists, as a new principle for application to surgery.

Nonligation of the Umbilical Cord in Ten Thousand Deliveries.—A. L. Rachmanow (*Zentralbl. f. Gynak.*, 1914), (*Surgery Gynecology and Obstetrics*) says it is physiological not to ligate the umbilical cord. In man and animals the structure of the umbilical vessels is such that when the fetus is separated from the mother by rupture or cutting of the umbilical cord its vessels do not bleed. Rachmanow has used this method in 10,000 cases from 1909-1911.

After delivery the mother should lie on her back and should not be moved. The respiration of the child and the pulsation of the umbilical vessels should be watched. After 12 to 18 minutes the umbilical vessels stop pulsating; then the cord is cut at a distance of about 4 cm. from the umbilicus. The cord is ligated only in case of very severe hemorrhage, indicating a pathological condition.

Not one child in the series died from hemorrhage from the nonligated cord. Ligation was necessary in only 17 per cent. of the cases, mostly in hemophilic, syphil-

itic, or immature children. The method is without danger and is better for the children because the umbilicus heals better.

Neosalvarsan in Noma.—Eschbach (*Bulletins et mémoires de la Société médicale des Hospitaux de Paris*, May 19, 1914), reports the successful treatment of a severe case of buccal noma in a child of two years. Following measles in three days grayish spots appeared on the lips which soon became thickened with a diffuse, gray, adherent false membrane. The gums and mucous membrane of the cheeks were also covered; the tongue becoming twice its normal size. The general condition grew worse, indicating grave intoxication. A one in fifteen solution of neosalvarsan in equal parts of water and glycerin was applied to the entire area of false membrane, together with irrigations with dilute hydrogen dioxide solution and hot compresses to the neck. The membranes became loosened and the swelling diminished in twelve hours. The neosalvarsan solution was continued four times daily with general condition greatly improved. A band of membrane on the lip persisting a solution of neosalvarsan and salvarsan one to ten the other one to five was used. The evidences of noma entirely disappeared in ten days and complete recovery followed.

Lypynol in the Treatment of Obesity.—

This product which is a mixture of colloidal platinum and palladium in proportions of fifteen milligrams of the former and forty milligrams of the latter in two c. c., Kauffmann in the *Münchener Medizinische Wochenschrift*, October 20, 1914, declares that this solution is readily absorbed when injected in exogenous obesity in which there is no disturbance of oxidation. Better results, he declares are obtained in exogenous than in endogenous cases of obesity. Muscular activity aids in the reduction of weight when lypynol is being used. Some of his patients expressed themselves as being able to do with less sleep without fatigue. A sense of euphoria was experienced more particularly when muscular exercise accompanied the use of the lypynol. Kauffmann believes that this method of treatment can

be successfully employed in cases of gout and diabetes, including diabetic coma.

Heroin in Parturition.—Knapp declares in the *Medical Record*, November 14, 1914, that he employs heroin hydrochloride hypodermically in childbirth as freely in the home as he would in the hospital; its use requires no expert assistant, while it produces no shock and completely relieves the pain and is without injurious effect upon the child.

When called to a woman in labor he makes sure that the pains are labor pains and awaits signs of distress in a first confinement. If, however, the patient has borne children he does not delay until pains become serious, but gives one-twelfth grain heroin hydrochloride hypodermically, which is followed within twenty minutes by drowsiness and a relief from pains. When this effect is in evidence he explains to the patient the need of bearing down during contractions. Between the pains the patient often falls into a light sleep. The effect of the one-twelfth grain of heroin usually continues for about three hours. He watches the patient and when pains again become severe gives an additional dose of one-twelfth grain or in other cases where pains are not severe one-twenty-fourth or one-thirty-sixth of a grain. In all cases he aims never to have more than one-twelfth grain in action at one time. Knapp declares that heroin inhibits the sensory nerves, but does not affect the motor nerves. Finally the author has employed the above method in about one hundred cases, all in general practice without, as above stated, injury to the child.

Duboisine.—This agent, identical in composition with the alkaloid hysocamine is a valuable hypnotic and sedative. It has been employed by Serabia y Pardo (*Revista de Medicina y Cirurgia*, October, 1914), with excellent results in the various nervous complaints characterized by general excitement, particularly hysteria. It was used hypodermically in hysteroepilepsy as well as true epilepsy with rapid diminution, followed by complete disappearance of the at-

tacks. It also proved valuable in the treatment of acute alcoholism, morphinism and maniacal dementia.

Stypticin.—Serabia y Pardo, (*Revista de Medicina y Cirurgia*, October, 1914), declares that he has used stypticin (cotarnin hydrochloride) obtained from narcotin in the hemorrhage of fibroid tumor, fungous endometritis, excessive menstruation, and in puerperal hemorrhage. He gave it hypodermically in doses of two-fifths grain (0.025 grain) four or five times a day for five or six days.

Pilocarpin in High Blood-pressure.—Robinson (*New York Medical Journal*, November 7, 1914), concludes in a careful study of pilocarpus jaborandi that in intelligently selected cases of hypertension, pilocarpin has not failed to be of value. The dangers usually accredited to pilocarpin have not been encountered in modified doses in which he has used it, a dose not mentioned in works on therapeutics. The general feeling that this agent is a dangerous one, the writer feels is due to the habit of administering it in the maximum dose of from one-tenth to one-fourth grain. Robinson gives the remedy in doses of one-thirtieth grain after meals in a full glass of water. No ill or inconvenience resulted. On the contrary vertigo, tinnitus aurium and turgid conditions of the face and neck disappeared. There was improvement in cardiac depression, cyanosis and normal glandular functions throughout the body, especially of the kidneys, sweat glands and glands related to digestion. Blood-pressure promptly fell and a general feeling of comfort prevailed in the fifty-three cases treated.

Adrenalin.—Phillips, (*Lancet-Clinic*, November 7, 1914), reports using adrenalin in the treatment of hypertrophied thyroid in doses of fifteen to forty drops of a 1-1000 solution three times a day in six cases all of which improved. He declares that adrenalin slows the heart while adding strength

to its beat; that the arterioles of the thyroid contract thus reducing the quantity of blood to the gland; accompanying nervous conditions disappear. Finally, Phillips concludes that adrenalin furnishes a secretion which is lacking in the diseased gland.

Autotherapy in Sudden Cessation of the Mammary Flow During Lactation.

Dietetic measures and the giving of thyroid or placental extracts are available when there is a gradual cessation in milk secretion during lactation, but are of no value writes Becarra (*Revue de Therapeutique Medico Chirurgicale*, December 15, 1913, *New York Medical Journal*, November 14, 1914), when there is sudden decrease or complete cessation of the mammary flow. The author continues: "When this complication occurs the mother is ordered to bed and given a diet of milk and carbohydrates; supplementary feeding of the child is adopted with nursing every two hours for three full days, when breast feeding is discontinued for four to six hours. One of the breasts is then made surgically clean and milked by hand also cleansed into a sterile receptacle. A sterilized syringe is then used to inject five drams of the milk under the abdominal skin previously made aseptic. Becarra found a single injection in two of three cases treated to be followed in thirty hours by an abundant secretion of milk. If, however, one injection is not sufficient a second may be given.

The Action of Adrenalin on Blood-Pressure in Typhoid Fever and Croupous Pneumonia.

—Mansretora (*Roussky Vrach*, June, 1914, *New York Medical Journal*, November 14, 1914), reports a series of observations on the effect of adrenalin on blood-pressure in the above conditions where it was necessary to maintain the circulation. He found that one c. c. of adrenalin subcutaneously injected caused a sudden rise of pressure with but slight increase of fullness of the pulse; 0.75 c. c. caused less rise in pressure but greater pulse amplitude both on account of increased systolic and lowered diastolic pressure; 0.5 c. c. did not

apparently cause any constriction of the peripheral blood-vessels, but by dilating the venous vessels and through its nerve mechanism of the heart, improved the mechanism of the venous circulation and consequently nutrition of the heart. Large doses are indicated in cases in which the pressure must be raised promptly as in postoperation shock, collapse or acute poisoning; otherwise the smaller doses are safer and productive of better results.

Crotalin Treatment.—Yawger (*Pennsylvania Medical Journal*, September, 1914), reports on the use of crotalin, six patients being under constant observation and sanitarium care. Two were not influenced, two became worse during treatment, one exhibited marked intolerance to the agent in the beginning and one died two and a half months after treatment, probably not as a result of the treatment, although there was no benefit from its use.

Diabeteserin.—Wolfheim (*Zentralblatt für Innere Medizin*, July 11, 1914), writes that diabeteserin containing eserine and salts of Trunczek's serum is recommended on theoretical considerations as well as clinical experience as rational and effective in certain cases of diabetes. Eserine has a tonic effect on the vagus while the salts of Trunczek's serum has for years been favorably used in arteriosclerosis. Wolfheim reports on eight cases in which diabetic treatment was also employed. Glycosuria was greatly reduced or entirely removed; other symptoms markedly relieved.

Chaulmoogra Oil in Leprosy.—Dr. Victor G. Heiser, Surgeon United States Public Health Service and Director of Health for the Philippine Islands, has been experimenting with a mixture of chaulmoogra oil, camphorated oil and resorcin used hypodermically in treating cases of leprosy. Dr. Heiser reported on his conclusions to the American Society of Tropical Medicine in Boston, a summary of

which appears in the *Public Health Reports*.

The author disclaims a specific effect of this mixture but declares that his experience shows that it gives more consistently favorable results than any other treatment that he has employed or had called to his notice. In some cases there were apparent cures, great improvement in many others, and it arrested the progress of the disease in every instance. He found the treatment equally efficacious in all forms whether tubercular or hypertrophic, the anesthetic or mixed type.

Veronal Habit.—Otto Glaser reviews nine cases of chronic veronalism and concludes (*Weiner Klinisches Wochenschrift*, October 29, 1914), that the continued use of this drug, even though it be only in small doses may lead to an intoxication, either mild or severe, the affected parts being the cerebellum and the vestibular apparatus, veronal being one of a group with this special property. The circulatory and digestive tracts are not influenced. The veronal when continually or too frequently used produces habit through its causing a condition of euphoria or well being. It inhibits the functions of the intestinal tract as well as those of the kidneys aside from an intoxication.

Treatment of Progressive Paralysis with Tuberculin.—Joachim (*Weiner Klinisches Wochenschrift*, October 29, 1914), reports the histories of ten cases of progressive paralysis cured by injections of tuberculin. In six of the cases a Wassermann reaction was changed from a positive to a negative. These patients were able to resume their work and return to their homes in from six to eight months.

Calcium Lactate in Some Forms of Dermatoses.—White (*Journal of Cutaneous Diseases*, October, 1914), declares that the effect of calcium lactate is not striking but efficient in urticaria, erythema multiforma, pernio, hyperidrosis and possibly purpura. Calcium lactate is not a specific for any skin disease.

RATIONAL ORGANOOTHERAPY

Conducted under the editorial direction of Dr. Henry P. Harrower.

The Essential Basis of Organotherapy.

—That the physician and his patients may derive full advantage of the advances in the special phase of therapeutics which is considered here, there must in the first place be a broad basic knowledge of the "how" and the "why" of organotherapy. The essential basis of organotherapy has been aptly epitomized by Dr. Hallion of Paris. Hallion's Law is as follows: "Extracts of an organ exert on the same organ an exciting influence which lasts for a longer or shorter time. When the organ is insufficient, it is conceivable that this influence augments its action and, when it is injured, that it favors its restoration." In the consideration of the fundamental principles of hormone therapy ("Practical Hormone Therapy," p. 25) the following conclusions are made and we believe that their appreciation will put the reader in the way of acquiring a control over certain of the chronic conditions which he now treats with more or less difficulty, and failure:

"If, then, it is possible successfully to influence the cell-workings of various organs by means of substances procured from other animals, the possibilities open to us are immense, and progress to the ultimate control of many complicated conditions is limited only by the capacity of the pharmacist to produce in convenient form and at a reasonable price, satisfactory preparations from those various animal organs.

"There is a genuineness in the enthusiasm of many students of this subject that many less interested individuals have not appreciated. The prospect of results in this field of research are positively enormous, and as our knowledge broadens and the facts become more generally known, many of these possibilities will become actualities and available in the everyday routine of any physician who is willing to apply them.

"This, all too briefly outlined, is the present position of hormone therapy. That it opens up a new pathway in therapeutics is undoubted. It explains in many respects the action of the older drugs and affords a solid groundwork for future methods of treatment. It would seem of the utmost importance, then, that practitioners should become thoroughly acquainted with its many ramifications and with this object the author has collated here many recent opinions and findings on this highly important subject."

We hope to make this new department of continuous interest; we believe that it can be of more than usual practical value to our readers and, finally, that by our combined study and effort we can increase the sum of our knowledge of the various branches of this subject as well as the breadth of an already extremely fertile field of endeavor.

Giving Organotherapeutic Products by Mouth.

—There seems to be a quite prevalent mistaken notion as to the availability of organotherapeutic extracts when given by mouth. The other day we were surprised to hear a prominent physician state that: "These extracts, with the possible exception of thyroid, are destroyed in the stomach; hence, it is useless to give them unless hypodermically." This is not true and the statement can be easily disproved. As a matter of fact, the hormones are quite stable substances, and are not even destroyed by heat. Further than this, since the largest share of the organotherapeutic products are given in powder or tablet form by mouth, there is surely enough therapeutic proof of their availability. We cannot very well fathom why the doctor had to qualify his position by making the parenthetical remark about the "possible exception of

thyroid." Why, if organotherapeutic remedies generally are destroyed by the digestive juices, should thyroid be the lone exception to the rule? Wherein does the active principle of the thyroid differ in its absorbability or destructibility from the similar hormones of the adrenals, pituitary, or gonads? The most conclusive and practical proof of the inaccuracy of such a position would be to have those who make such statements (or believe them) take, say an ounce of a 1:1000 adrenalin chloride solution—it contains less than half a grain of the adrenal active principle—and note carefully if there is not a considerable modification of the circulatory equilibrium!

Parathyroid Therapeutics.¹—The parathyroid granules are essential to life, in spite of their seeming insignificance and small size. They are not histologically connected with the thyroid, certain statements to the contrary notwithstanding. Their origin is different, their structure is quite dissimilar and their physiologic action seems to be particularly specialized. Parenthetically it would seem that thyroids selected for the manufacture of thyroid extract should not contain parathyroid tissue, and *vice versa*.

The principal physiologic activities of the parathyroids concern the control of the mineral salts in the system, and especially the destruction of toxins, particularly those which exhibit an affinity for nervous tissue and cause disorders in which nervous

manifestations are prominent.

These two fundamental considerations have brought about the study of the possibilities of parathyroid extract as a means of controlling certain conditions of abnormal metabolism, as well as in the treatment of these toxemias in which the symptoms are essentially nervous, such as tetany, paralysis agitans, chorea and, occasionally, epilepsy. All these conditions exhibit varying manifestations of spasmodic movements and are now considered to be purely toxic in origin. Further than this there seems to be accumulating a fund of evidence from the autopsy tables that the parathyroid glands are frequently changed in some way in the above and similar diseases.

In current medical literature some stress seems to have been laid upon the therapeutic value of parathyroid extract in the treatment of Parkinson's disease than in any other condition. A number of articles will be found recommending parathyroid therapy in paralysis agitans and other conclusive conditions² and recounting clinical experiences in terms sufficiently encouraging at least to warrant the continuation of this method of treatment, for it will be remembered that the text-books are very laconic in their statements regarding the prognosis of this disease: "Paralysis agitans is an incurable disease"; "The treatment of Parkinson's disease is most unsatisfactory"; "Aside from the control of some of the symptoms paralysis agitans does not offer hope of a cure," etc. Of course paralysis agitans is a difficult disease. It is most insidious in its onset, is chronic and progressive, and there are usually organic nervous changes, yet in spite of this Berkeley reports that his experience with a large number of patients now well up in the hundreds show that benefit has accrued for over 80 per cent. After some weeks, sometimes months, one may notice a gradually lessening muscular rigidity, and better muscular control, diminished pain, and the abolition of drooling. He recommends giving gr. 1-20 to gr. 1-50 twice a day for a period of months.

Unnecessary Delay in Labor.—In one of our recent exchanges we read a case report which may be used to bring out an im-

¹Moussu (G.): De la medication parathyroïdienne, *C. r. Soc. Biol.* (Paris), 1899, 11, 242.

Berkeley (W. N.): A brief report of experiences with parathyroid gland in paralysis agitans, *N. Y. Med. J.*, 1907, lxxxvi, 974.

Id: The parathyroid treatment of paralysis agitans, *Int. Clinics* (Philadelphia), 1912, xxii, 4, 1.

Alquier (L.): Les parathyroïdes et la maladie de Parkinson, *Rev. d. Neurol.* (Paris), 1909, xvii, 934.

Salvioli (J. H.) and Carraro (A.): Ueber die Wirkung der Parathyreoidextrakte, *Verh. d. deut. path. Gessel.* (Jena), 1912, xv, 264.

Morel (L.): L'insuffisance parathyroïdienne et son traitement, *Paris Med.*, 1913, 361.

Castaigne (J.), Gouraud (F. X.), and Parisot (J.): L'opotherapie thymique et parathyroïdienne, *J. med. franç.* (Paris), 1912, vi, 129.

Harrower (H. R.): The properties of parathyroid extracts, *N. Y. Med. Jour.*, 1914, xcix, 420.

²See reference in foot note.

portant point: A woman in labor for some days had had no pains during the two days and nights the physician stayed with her. The os was almost completely dilated. Eclampsia seemed to be impending and so forceps were ultimately used. A similar condition occurred seventeen months later and again forceps were used. The doctor emphasized his thoughts by adding: "It is annoying for a country doctor to have to go five or six miles and stay so long when there is other work."

Such delay is by no means necessary, however, for the advances in practical organotherapy have eliminated it; and at the same time the use of forceps has been obviated in perhaps 80 per cent. of all obstetric cases. The active principle of the posterior lobe of the pituitary exerts a specific influence upon uterine contractility and, given in the second stage of labor, it will reduce its length to an hour or even less. It is one of the seven wonders of the world (of therapeutics) and we cannot see how we managed to do without it before 1910. The writer well recalls a 7-para who had "never had any trouble before" whose accouchement kept him 54 hours. With this present knowledge at least 50 of them would have been saved for some far more useful work.

The physician should familiarize himself with the value of pituitary in obstetrics, and never fail to have a supply in his bag; it will save many long hours of needless waiting.

A Valuable Review.—The literature on the internal secretions, and especially that which concerns the history and growth of this study, has been greatly enhanced by a recent series of articles by Dr. Fielding H. Garrison of the Surgeon-General's Library, Washington, D. C. in the *Popular Science Monthly* (Dec., 1914, Jan. and Feb., 1915). Dr. Garrison publishes a historical review—"Ductless Glands, Internal Secretions and Hormonic Equilibrium"—which in a most fascinating way, unfolds the story of this modern yet ancient study. The author has the facility of making the dry bones of historical fact seem alive, and his information on subjects relating to the history of medicine is fully appreciated by those who have been fortunate enough to

read his recent book on the subject. To the physician who likes to get at the foundation of things, this review will be very interesting reading, and none can well consider the practical side of this subject as of trivial interest, after reading this collation of facts.

Possibilities of Pineal Therapy.—Quite an impetus has been given to the study of the possibilities of pineal extracts by the appearance of an article in the March "*Cosmopolitan*," entitled "Magical Menders." Since it is a form of organotherapy which is of quite recent origin and has barely reached adolescence, we feel, perhaps, that an undue enthusiasm may have been created in the minds of some, for medical articles in the popular magazines usually concern matters regarding which the profession is better acquainted.

It happens that the principal value of this method of treatment lies in its influence upon the mental and physical development of certain backward children, and as a result of the above article, the present writer already has had a number of letters asking for opinions and suggestions regarding this method. Here is an excerpt from one of the answers:

"It is perfectly true that the pineal gland is one of the more recently studied organs of internal secretion, and Dana and Berkeley of this city (*Med. Record*, 83, 835, 1913), report good results from the administration of pineal extracts here and at the Institution for the Feeble-Minded at Vineland, N. J. However, I cannot but feel that the optimism which prevails in the article, in the *Cosmopolitan* is somewhat unwarranted. Do not misunderstand me. I do not say that the reports are exaggerated or that the prospects have been overestimated. I simply believe that we have much more to learn about the value of pineal extract, and that the maldevelopments for which it has been recommended are usually extremely difficult cases to treat.

"To my mind, pineal extracts offer a certain element of hope and, of course, the parents will gladly snatch at this straw in spite of its almost prohibitive cost. Try it if you wish, but do not omit the other better-known hygienic, educational and vocational measures."

The dosage of pineal extract has not yet been thoroughly worked out. It would seem to be about 3 to 5 grains of dried pineal substance per day in divided dosage. It is not recommended for use in adults. The principal recent articles on this subject are as follows:

- De Cyon (E.): Les fonctions de l'hypophyse et de la glande pineale, *C. r. Acad. Sci. (Paris)*, 1907, cxliv, 868.
- Ott (I.), and Scott (J. C.): The action of the corpus luteum and the pineal body, *Mo. Cyc. and Med. Bull. (Philadelphia)*, 1912, v, 207.
- Dana (C. L.) and Berkeley (W. N.): The functions of the pineal gland, *Med. Record (New York)*, 1913, lxxxiii, 835; see also *Pr. med. (Paris)*, 1913, xxi, 769.
- Eyster (J. A. E.), and Jordan (H. E.): Effect of intravenous injection of extracts of the pineal body, *Am. J. Physiol. (Boston)*, 1910-11, xxvii, p. xxiii.
- Kidd (L. J.): The pineal body: a review, *Rev. Neur. and Psych. (Edinburgh)*, 1913, xi, 1.
- Exner (A.), and Boese (J.): Ueber experimentelle Extirpation der Glandula pinealis, *Deut. Ztschr. f. Chir. (Leipzig)*, 1910, cvii, 182.
- Marburg (O.): Zur Kenntnis der normalen und pathologischen Histologie der Zirbeldrüse. Die Adipositas cerebialis, *Arbeit. a. d. neur. Inst. Univ. Wien.*, 1909, vol. xvii.
- Biach (P.), and Hülles (E.): Ueber die Beziehungen der Zirbeldrüse zum Genitale, *Wien. kl. Wchnschr.*, 1912, xxv, 373.
- Editorial: The function of the pineal gland, *Lancet (London)*, 1914, i, 401.
- McCord (C. P.): The pineal gland in relation to somatic sexual and mental development, *Jour. Am. Med. Assn. (Chicago)*, 1914, lxiii, 232.

"The Test of Time."—The oldest form of therapeutics has become the newest. Organotherapy, an established form of treatment centuries before Christ, in the past few years has been established as a scientific and most reasonable form of therapeutic effort. There are two principal reasons for this trend of therapeutic interest: First, the discovery of the hormones¹

¹Readers of this new department frequently will run across the word "hormone." Here is a fairly good definition of it: Hormone (Gr. *Hormáo*, I arouse or set in motion). A product of the metabolism of certain cells which, conducted by the blood or lymph, functionally connects certain remote organs effecting a correlation between the organ of origin and the organ or organs which it excites. A so-called "chemical messenger" (Starling). Hormones are virtually the active principles of the glands of internal secretion.

and their action, and the resulting scientific explanation of the action of the various hormone-bearing extracts and their consequent removal from the fields of pure empiricism. The second reason is equally important, and relates to the production of convenient and standard organotherapeutic extracts by various manufacturing houses. The advances made in this direction have materially facilitated the clinical application of ideas first hinted by physiologists and then tested and standardized from the therapeutists' view point.

With this increasing knowledge and convenience, it behooves every progressive physician to avail himself of the numerous opportunities which organotherapy offers to him. It is quite true that many of the procedures now being vigorously recommended do not have the backing of many years' use, and there are still some physicians who insist that all the procedures which they are willing to apply must have stood the "test of time" rather than the test of results. Too often when statements are made regarding the need for further study of the subject, or the present insecure basis of organotherapy, and such like, they are made without due consideration of the facts, chief among which are the extreme antiquity of organotherapy and the definiteness with which physiologists and therapeutists have established the physiologic action and therapeutic virtues of many of these substances.

The first article regarding the therapeutic possibilities of Sir Edward Schäfer's discovery in 1895 that the pituitary gland was an internal secretory organ was not made until the close of 1909, and in the five years that have elapsed pituitary extract has achieved a positively extraordinary vogue—and the end is not yet. Physicians who are accustomed to allow a new and novel procedure to remain on the shelf for a certain period of years in order that it may be aged and "stand the test of time" are enthusiastic in their praise of this new measure and none can gainsay the results that have been attained. This single experience can be duplicated many times and it would almost seem that the position of the practical physician is being modified, he now believes that: "The test of time is secondary to the test of results," for results count no matter how they are obtained.

PRACTICAL NOTES.

Many of the so-called "incurable diseases" have been put back into the "curable" class by the advances made in organotherapy.

Loss of Eyebrows.—The loss of the outer third of the eyebrows is often an indication of hypothyroidism.

Joint Pain.—Severe pain in the joints, especially in arthritis deformans, may often be controlled by persistent thymus medication.

Reinforcing Lutein.—Sometimes failure to secure expected results from corpus luteum therapy may be obviated by adding small doses of thyroid; say 1-4 grain thyroid to 5 grains of lutein.

It takes approximately 5,000 pineal glands of cattle to make one pound of the available substance.

Low Total Solids.—Sometimes a small dose of thyroid extract will enliven the metabolism and almost double the persistently low output of certain solids. Maximum amount per dose gr. $\frac{1}{4}$. Buttermilk goes with this treatment very nicely.

Severe Obstipation.—A case of obstipation lasting twenty-one days and defying all usual treatment was relieved in a few hours by two hypodermic injections of pituitary extract (ampules).

Adrenal Substance in Cholera, etc.—Cannon, of Boston, has shown conclusively that the emotions—fear, rage, pain, etc.—

excite the adrenals. In such conditions as cholera, typhoid and severely painful wounds adrenal substance ($\frac{1}{2}$ gr. every 2 or 3 hours) may advantageously supplement the depletion of the adrenals and raise the lowered pressure, tone the heart and generally increase the recuperative powers.

Reflex Endocrine Disorders.—It is practically impossible for an individual to manifest an internal secretory disorder of a single gland. The relations of these hormone-producing organs are so intimate that disturbed function in one gland causes a greater or less reflex disturbance in one or more of the others.

Organotherapy in Indigestion.—The alimentary hormone, secretin, discovered by Starling thirteen years ago is as remarkable a therapeutic agent as it is shown to be in the physiologists' laboratories. It combines with the precursors of the digestive enzymes—so-called "pro-ferments" or granules—in the pancreas, upper intestine and liver.

Mamma vs. Ovaries.—The mammae produce an internal secretion which exerts a decided antagonizing effect on the ovaries or corpora lutea. This has been put to good therapeutic advantage in the treatment of functional uterine hemorrhages due to ovarian superactivity. Dose: three to ten grains of mammary extract before meals.

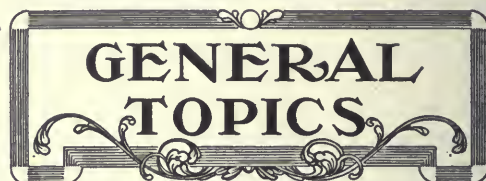
Aborting Mammary Abscess.—The specific action of the principle of the exterior lobe of the pituitary includes the remarkable influence upon the milk ducts. Therapeutic use has already been made for this, for pituitary solution has been successfully used to prevent stasis in the ducts, and this aborts the appearance of an impending mammary abscess. One ampule by hypodermic injection; repeat in 24 hours if necessary.



TREATMENT

The Casein Treatment of Diabetes.—Williamson (*Brit. Med. Jour.*, Mar. 20, 1915), in carrying out this treatment, gives casein and cream in small quantities every two hours. The patient is kept at rest in bed, or on the sofa, and every two hours, from 8 a. m. to 10 p. m., receives a glass of artificial milk prepared from casein, cream, and water. One tablespoonful of casein is well mixed in a tumbler with one tablespoonful of cream until a paste is formed; then hot water (or cold if preferred) is added gradually until the tumbler is full, the mixture being well stirred with a teaspoon whilst the water is being added. A white fluid is thus prepared which has the appearance of milk. It contains milk albumin and fat, but only a very small percentage of milk sugar derived from the cream. The fluid may be sweetened with saccharine if desired, or a pinch of salt may be added, or it may be flavored with nutmeg, according to the patient's taste. Most patients prefer the fluid warm. Usually the patient takes this artificial milk quite well, and likes the taste; some take it well, but do not find the taste quite satisfactory; but a few patients complain that it causes nausea, and in such cases it should be at once discontinued. The fluid may be taken well when it is hot, but may cause nausea when lukewarm or cold. When it produces nausea, or is distasteful even when the fluid is warm, another preparation of casein should be tried. 1. This method will often remove the sugar from the urine when the ordinary rigid diabetic diet has been unsuccessful, and this is its great value. 2. The results are often prompt, the urine being free from sugar after two or three days. 3. After a period of treatment with casein and cream the patient is often able to take ordinary diabetic diet, or even a less rigid diet, without the appearance of sugar in the urine, whilst previous to the casein treatment the most rigid diabetic diet did not remove the sugar from the urine. 4. Though the sugar will return in the urine in course of time in most cases after the patient's diet has been relaxed, the return is much less rapid than when the sugar has been removed from the urine by an ordinary rigid diabetic diet. 5. The casein method is not expensive and is easily carried out. 6. In most cases of the very severe forms of diabetes in which the urine contains much diacetic acid the casein treatment is of little value, and sometimes may be very unsuitable; still in certain cases it is of much service, and may remove the diacetic acid and even the sugar from the urine for a short time, and on returning to a less rigid diet the sugar excretion may be very small for a

long time and the diacetic acid may not return for a long period. Such cases form only a minority of the cases of this class.



GENERAL TOPICS

Physician's Coast to Coast Study Tour.—Full details are now available for the next round trip of the American Society for Physicians' Study Travels. A special all-Pullman train starts from Philadelphia June 6th for St. Louis, Denver, Salt Lake City and the Pacific Coast, returning via the northern route and Chicago so as to reach Philadelphia July 12th. This provides for attendance on the annual meetings of the American Medical Association and the American Climatological Association. The Panama exhibitions at San Diego and San Francisco and the health resorts, teaching institutions, and great natural scenic attractions en route are included so that a liberal course of post graduate study is possible. Local committees of the profession at notable points reached will as usual doubtless help to make this across continent tour one of unusual attractiveness. Travel details otherwise are in the hands of a well-known tourist agency. As the train space is limited, physicians with members of their families and other friends should secure berths promptly.

Testimonial Banquet to Dr. Jacobi.—A testimonial banquet will be tendered Dr. A. Jacobi by the medical profession, his friends and admirers, under the auspices of the Bronx Hospital and Dispensary, on the occasion of the eighty-fifth anniversary of his birthday, on May 6, at the Hotel Astor.

To give the younger members of the profession an opportunity to participate in the celebration and to come in contact with the venerable Nestor of American medicine, the price per plate has been fixed at three dollars.

The medical men on the committee of arrangements are: William J. Robinson, chairman; Arpad G. Gerster, Willy Meyer, S. W. Lambert, J. Brettauer, Francis Huber, A. A. Berg, M. Rehling, S. A. Knopf, H. Edwin Lewis, M. Aronson, Otto Schirmer, Max Rosenthal, Henry Heiman, A. L. Goodman, A. Hymanson, Alex. Goldman, A. A. Brill, A. L. Goldwater, H. Schumer, H. J. Epstein.

Communications should be addressed to William J. Robinson, M. D., 12 Mt. Morris Park West. Reservations for seats should be sent to A. L. Goldwater, M. D., Treasurer, 141 West 121st Street.

American Medicine

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and

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Proteid Metabolism and the Abderhalden Test.—In the older text books on physiology the chapter on the digestion of albumins is delightfully simple as compared with the newer ideas on this subject.

Most of us even at the present time are content to believe that the peptones represent the ultimate product of proteid digestion, but the researches of Fischer and other physiologists have made it impossible any longer to accept this view. The process, indeed, seems far more complex and extends much farther than the mere formation of peptones. If the albumin molecule that is being digested is likened to a building that is gradually being demolished until nothing is left but the stones that composed it, one will get an excellent idea of what is actually taking place.

The complex albumin molecule is gradually disintegrated with the formation of albumoses, parapeptones and peptones until all that remains are its ultimate elements, its building stones, so to speak. These are the so-called amino-acids of which there is no doubt an immense number, comparatively few, however, being definitely known. It is out of these amino-acids, after their absorption, that the different types of body cells construct the proteid material which is best adapted to their individual needs.

This may appear purely theoretical, but

it is certainly logical. It is quite easy to understand why a nerve cell, for instance, should require a different kind of proteid material for its metabolism than a muscle cell, or a glandular cell, and therefore why it should exercise a selective power in this respect.

Since nature evidently intends that all the albuminous elements of the food shall undergo such a preparatory cleavage in the gastro-intestinal canal previous to their absorption and entrance into the circulation, it is not difficult to understand that some provision should be made by the organism to protect itself against proteid matter gaining access to the blood directly without having undergone preliminary digestion. As is well known, the direct introduction of a certain amount of albumin, albumoses or peptones into the blood may give rise to serious trouble, but it happens that under certain conditions such foreign proteids find their way in small amounts into the blood, as for instance in pregnancy when chorionic cells make their entrance.

How then does nature dispose of these invaders? To Abderhalden we owe the answer or at least a plausible explanation. From his remarkable researches it appears that when foreign proteids gain access to the blood there is a formation of protective ferments which break down the albumin

molecule and convert it into peptones and amino-acids. In other words, what actually takes place is a sort of parenteral digestion. This hypothesis, however, is not merely of theoretical interest for it already has borne fruit in the so-called Abderhalden tests for pregnancy, cancer and other diseases.

The basis of the test as already indicated, is the presence or absence of specific protective ferments in the blood. If the serum derived from the blood of a pregnant woman is brought in contact with placental albumin, the protective ferments contained therein will attack the latter and convert it into peptones and amino-acids. To demonstrate that such a change has taken place Abderhalden resorts to dialyzation. As is well known, albumins are non-diffusible and will not pass through dialyzing membranes, while peptones and amino-acids will pass through without difficulty. If, therefore, properly prepared placental tissue (free from all contamination with peptones) is placed in a dialyzing apparatus and mixed with serum obtained from the blood of a pregnant woman, the result will be a formation of peptones and amino-acids, and these substances after passing through the membrane can be demonstrated in the filtrate by certain reactions, the most accurate being the so-called ninhydrin reaction of Abderhalden. On the other hand, the serum of a non-pregnant woman when allowed to act on placental tissue will not disintegrate the albumin, so that no cleavage product passes the filter and no reaction is obtained.

While on account of its complexity the Abderhalden is practically a laboratory test, this should not militate against its more general use in cases of suspected pregnancy since sufficient evidence has already been

adduced to demonstrate its great value. No doubt when it is still further perfected even more satisfactory results will be obtained.

There is abundant reason that this reaction will also prove an important auxiliary in the diagnosis of cancer. According to Abderhalden the blood of subjects of malignant disease contains protective ferments against cancer proteid, and the presence of these can be verified by a procedure similar to that outlined above. In other words, if carcinomatous tissue is subjected to the action of serum from a patient suffering with malignant disease there will be a formation of peptones and amino-acids, the presence of which in the dialyzed fluid can be detected in the same manner as previously described. Thus it will be seen that if the Abderhalden reaction proves all that its advocates anticipate, it will constitute a noteworthy addition to our methods of diagnosis.

Unbusiness Methods of Medical Men.—It is a notorious but melancholy fact that members of the medical profession are with few exceptions most unbusinesslike. Perhaps the altruistic nature of their calling renders them more careless and indifferent to money matters than those of other professions; many a physician has undoubtedly felt the difficulty of placing a monetary value on services given without the slightest thought of personal gain. But probably the main reason for the unbusinesslike ways of most medical men is that they are untrained and inexperienced in business methods. In the old days it was regarded as undignified and unworthy of a physician to bother himself concerning money. His bills were paid whenever a patient felt inclined to do so and he usually

lost a considerable portion of the sums earned each year by his failure to collect the same with any degree of system or regularity. Even at the present time though the sick do not hesitate to send for a doctor at once, when, thanks to the treatment and care they are restored to health, they often show a surprising indifference to the obligation due the doctor, and not infrequently forget it altogether. And yet these same people never think of allowing their butcher and grocer bills to run, and are punctilious to a degree in paying their regular debts. Can it be the knowledge that tradesmen will insist on payment—and doctors will not—that accounts for the promptness in one direction and the dilatory methods in the other? Happily the modern physician is becoming more awake to his own interests, and in some instances as keen and successful in collecting his earnings as any well trained business man. But while real progress has assuredly been made in this direction, the majority of medical men are still very remiss in not safeguarding their financial interests, or conducting their affairs along rational business lines.

As a matter of fact the only ones who use up-to-date methods in the practice of medicine are, as pointed out in an editorial in the *Medical Press and Circular*, (April 21, 1915), the men doing large cheap practices in the big cities, and some specialists. These men insist on the regular payment of their fees, and take pains to impress their patients with their methods of doing business. They do a good deal of charity work, but at a definite place and absolutely refuse to treat patients free in their private offices. This serves a double purpose, (1st) teaches patients that if they take up a doctor's time in his private office and during his business hours, they are expected to pay

for it, and (2nd) makes such a distinction between pay patients and charity patients, that very few of those who can pay will fail to seek private treatment.

It must be remembered that the doctor is not by any means a free agent, for he is tied down by etiquette and ethics. He is not allowed to advertise, and what publicity he obtains has to be acquired with great discretion; hence he cannot use too urgent or forceful measures in the recovery of his just debts. In spite of this, however, he can—and should—keep a careful record of the services he renders and the charges for the same, and send bills regularly.

An excellent paper, which recently appeared in *AMERICAN MEDICINE* (April 1915), concerning "Fee Splitting," by Dr. Samuel Tannenbaum, has brought in considerable correspondence. Among the many commendatory letters received is one from Dr. Samuel Ginsburg of Buffalo, who considers that Dr. Tannenbaum has tapped a virgin lode, that of medical economics, and urgently recommends that a subject so important to practicing physicians should be taught in the medical schools. Dr. Ginsburg criticizes very severely, and quite feelingly, the manner in which a young practitioner starting out into practice without money has to comport himself in order to obtain any kind of a living. To make substantial headway he has to kow-tow to his clientele and to do many things which are subversive of dignity and self-respect. He thinks, therefore, that the teaching of business methods as a detail in the regular curriculum would fit the budding physician for his duties in such a way that he would be able to achieve a competent income without extraneous assistance of an unpleasant character.

There is no doubt that, as a rule,

the average young medical man is quite devoid of any comprehensive knowledge of the material or economic problems of medical practice, and as a consequence is seriously handicapped in the early years of his life work. The great danger is naturally the development of certain evils and abuses, born of financial stress. Thus we see commercialism in questionable form gaining a foothold among doctors in many communities, as witness for example, the growth of "fee splitting." Business methods that are in accord with honesty and good principle deserve careful cultivation and support, but when they conflict with the open, above board dealings a patient has a right to demand on the part of his doctor, they cannot be too severely criticised and condemned. For this reason, the conscientious physician should steer with the utmost care between the Scylla of exaggerated ethics and the Charybdis of questionable commercialism. In every instance, the welfare of the patient must be placed before material gain of the doctor, but this in no way means that the practitioner of medicine shall not safeguard in legitimate ways his own interests. A careful consideration of present day medical practice leaves no doubt that the teaching and inculcation of sound business methods in the training of medical students would bring distinct advantages to medical practitioners, and in no way, shape or fashion jeopardize the interests of the sick and suffering. "The laborer is worthy of his hire" is a truism that applies as aptly to the practising physician as to any other "worker in the vineyard."

The Growing Importance of Radium in Modern Therapeutics.—There is no doubt

that the average medical man is prone to look upon radium as a therapeutic luxury that is within the reach of but a fortunate few, and for this reason alone has failed to give radium treatment the attention that recent studies certainly justify. The results already accomplished, however, have been so successful, and even remarkable, that it is reasonable to conclude that in the near future a much larger number of patients will demand its use. There is hope, moreover, that an increased output of this rare and precious metal due to discoveries of new sources of supply and improved methods of production will lead to a reduction in the price. But even if this hope is deferred much is to be expected from recently devised methods of renting out radium, and particularly from the utilization of its emanation. This emanation, which is a gas, constitutes, so to speak, the active principle of radium and when employed in sufficient strength produces practically the same effect. A very large volume of emanation can be compressed and stored in a small space, as in a capillary tube, and applied in the place of radium itself.

The fact that radium is an imperishable substance, losing but half its weight in eighteen hundred years even though constantly giving off its energy, permits of its emanation being produced at a comparatively moderate cost. It is very much like using the interest on a sum of money while keeping the principal intact. Of course, it must be remembered that the emanation is a fugitive substance which loses half of its activity in about four days, so that tubes charged with it have to be frequently renewed, but this is no great obstacle if a source of supply is constantly on hand. Some have questioned whether a sufficient

amount of emanation can be collected in a small tube or other device to produce an effect equal to that of radium in substance. Since this evidently can be done, the principal factor militating against the more general use of the emanation has been moved. So much for the external application of radium.

In the treatment of internal diseases the emanation is already being extensively employed. Various apparatuses have been introduced by which water can be readily charged with this gas in any desired strength and at a moderate cost. The principle of most of these devices is a radium bearing rod, cylinder or plate consisting of a substance which will act as a constant generator and source of supply. It is interesting to observe that in the natural radio-active springs the water becomes charged with emanation by flowing over soil impregnated with minute amounts of radium, so that the above is an artificial reproduction of what takes place in nature.

While the drinking of radio-active waters constitutes the most convenient and economical method of administering the radium emanation, many specialists prefer the inhalation treatment in which large amounts of air charged with this gas are inhaled for a prolonged period in an emanatorium. At the mineral springs resorts bathing in natural or artificial radio-active waters is also largely employed, although it is quite doubtful whether much of the emanation is absorbed in this manner. There is a tendency on the part of some authors who have written of the emanation treatment to indulge in an enthusiasm which is as yet not warranted by the results obtained. Nothing tends so much to discredit a new method as unjustified claims and unconscious exaggeration. To assert, for in-

stance, that the results obtained at some health resorts are due solely to the radium emanation, without taking into consideration the many other factors, such as change of air, diet, exercise, the mineral ingredients of the waters, or the beneficial effect of routine bathing and copious ingestion of water itself, is most injudicious.

Long before anything was known of radio-activity there was a popular belief that the healing properties of certain springs were due to some occult influence apart from the mineral ingredients, and later medical men were led to attribute the effect to magnetism or electricity when it was found the water failed to give the same results when drunk away from the springs or bottled. This can now be easily explained since it has been shown that the emanation rapidly decomposes, and water charged with it loses its radio-activity within a short period of time.

Radium and Its Influence on Human Metabolism.—However much one may be disposed to question the therapeutic power of the radium emanation, it cannot be denied that anything introduced into the body which has been conclusively shown to exert a strong, stimulating influence upon the growth of plant life is most likely to exert a similar effect upon the nutrition of the human organism. So when it is claimed that the emanation promotes metabolism, the claim does not appear unreasonable.

Again, since the alpha rays which are given off consist of particles charged with positive electricity and possessed of strong ionizing power, while the beta rays are carriers of negative electricity, and the gamma rays closely resemble the X-ray, the introduction of the emanation undoubtedly liberates a not inconsiderable amount of poten-

tial energy, electrical and chemical. To maintain that internal radium emanation therapy is merely a fad because of the mystery in which its *modus operandi* is still enshrouded, and to ignore the results of clinical experience by reputable and even distinguished practitioners, shows a bias that is not in keeping with progressive medicine. It must be borne in mind that this treatment has been largely employed in conditions in which curative effects cannot be expected from any form of medication, such as the chronic types of arthritis, including arthritis deformans. The results to be looked for under these circumstances are merely palliative, particularly in the advanced cases, but even here the relief afforded in the way of alleviating pain and other discomfort and perhaps retarding the further development of the disease is not to be ignored. Moreover, the beneficial psychological effect of an entirely new therapeutic method is deserving of consideration if it only enables these chronic invalids to bear their suffering with greater equanimity.

There seems to be no doubt as to the value of radium emanation in gouty conditions, since it has been definitely shown to increase the output of uric acid, and also that it is an analgesic of no mean power. But above all, sight must not be lost of its stimulating influence on enzyme activity, and this perhaps explains its effect upon the metabolism.

Does it, therefore, seem like stretching the imagination to hopefully anticipate that this treatment will prove of benefit in many conditions of impaired metabolism, and that while far from being the "Fountain of Youth," it will help to promote nutrition in the aged and infirm and thus increase their vital resistance?

Why Are Physicians Skeptics?—It would almost seem that the remarkableness of many of the discoveries in physiology as well as the practical value of many of these investigations in medicine and surgery would help to remove from the medical profession the cloud of skepticism which has enveloped many of its members for so long. Nowadays the average man is willing at least to listen to almost anything, for his one-time bulwark of incredulity has been sadly shattered by the progress of the past twenty-five or thirty years.

The man who now laughs at wireless telegraphy is considered to be a fool, just as was the old farmer who, when he saw for the first time a train approaching the depot, is reported to have said, "There ain't no such thing, no how." From the ignorant this is to be expected, but hardly from educated physicians, for the great medical discoveries constantly being made warrant a different attitude. Still skepticism prevails.

For example, the subject of cancer has been, and probably will be for some time to come, the basis of many widely differing reports as to remedies or "cures," and when the reports of some promising experimental work in the treatment of cancer at the New York Polyclinic Hospital appeared in the *New York Times*, a prominent physician in charge of one of the most important cancer researches in the world is made to say in an interview, "I have had no personal experience with the new treatment, *but I don't think we will bother about it.*" To the newspaper reader at least, this is as absurd a position as one could be expected to take. It virtually amounts to this. "I have done no work with this method; consequently, it cannot be any good." How is it possible for a physician, with no personal experi-

ence with a certain remedy or treatment to be sufficiently informed of its value or uselessness, to pass judgment upon its merits? We admit that this gentleman in the interview is further reported to have said: "There are so many serums and new treatments for cancer that look more promising than this one, that I believe we could spend our time more profitably than in research involving its use. It has caused a great deal of laughter among surgeons—apparently the only ingredient overlooked in the preparation of the new remedy was a rabbit's foot."

It will be comforting to the investigators in spite of the dictum just quoted to recall the derision with which Roentgen's immortal discovery was received less than twenty years ago, the idea that a living man's skeleton could be photographed being really too absurd to be considered. We all remember the storm of hilarious incredulity with which other advances have been received, not merely in medicine but in the other sciences; and we have also seen how sheepfaced some of those looked who were loudest in their amused denunciations, when after careful investigative work the absurdity wore off and was eventually replaced, first by increasing confidence, and later by absolute dependence.

It is a pretty well established fact, therefore, that practically every important advance that has been made has first had to go through "the sneering period." We do not know whether the Horowitz-Beebe "discovery" deserves to be given this name. We only know that an interesting report has been presented by men whose standing entitles them, at the least, to a respectful hearing and a careful testing of their treatment before it is questioned.

Contradictory Findings in the Wassermann Test.—We are beginning to have serious doubts of the infallibility of the Wassermann test. Indeed, confusion has been growing for some time in the minds of not a few of our leading specialists as a result of the contradictory reports from serologists concerning the findings from the serum of the same patients taken at the same time and submitted to different laboratories. As a result patients have often been subjected to specific treatment notwithstanding a negative history of lues, and made to suffer, if not permanent injury, at least great mental anguish. So common have these contradictory findings become among competent syphilographers, that in not a few instances the test has been greatly discredited, and in many cases abandoned as practically useless. Why the laboratory findings of presumably equally expert serologists frequently vary so widely cannot be explained. It is true that the technic is a very exacting one with many avenues for error. Therefore, unless the present method is simplified, or modified, and made more exact, it is to be feared this very valuable diagnostic aid will cease to occupy the place it should. It cannot be that our technicians are alone to blame, for we find in consulting a report on "A Further Clinical Study of the Contradictory Findings in the Wassermann Test" by Dr. Abr. L. Wolbarst, of New York City, (*Interstate Medical Journal*, Vol. XIX, No. 2) that the same difficulties exist in Germany. Dr. Wolbarst quotes Wossidlo as making a study of twenty cases in seven different serologic institutes in Berlin, of which seven agreed and thirteen disagreed.

Dr. Wolbarst further reports thirty-three cases in his own experience in which

absolute contradictions were found. In comparing two series of cases he found the following interesting figures: three serologists examined 85 cases; in 42 per cent. of these the findings agreed, in 19 per cent. they differed and in 39 per cent. they were contradictory.

Dr. Pusey of Chicago, in a recent communication (*J. A. M. A.*, November 22nd, 1913) says that "the greatest fault is carelessness in technic; another source of error is old blood. Blood two days old, even when kept in an ice box is unreliable for a test; and much more so, if kept at car temperature whilst in transit to a distant laboratory."

There is very little encouragement to be obtained from the serologist himself, says Dr. Wolbarst, for all agree that the present status of the Wassermann test is quite unsatisfactory, owing to the fact that there is no uniformity or standard either in the reagents or in the technic employed. Herein we believe lies the greater part of the trouble.

Wolbarst concludes that the Wassermann is dependent for its result on the skill and knowledge of the serologist, as well as on an absolutely perfect standardization of the reagents used. As a consequence it is a gross error to accept the findings of one serologist as conclusive.

Perhaps the reagents may in time, at any rate they should if possible, be prepared, standardized, and distributed from some one recognized source. This would surely tend toward greater uniformity in the final results. At all events it is evident that the findings of no one Wassermann test taken alone should be accepted as absolute; but two or more positive reports from different sources taken in connection with a carefully obtained history and certain objective

symptoms can doubtlessly be considered as of great corroborative value.

The Clutch of Circumstance.—One would, we feel certain, prefer to write of those persons or events which, if they do not highly edify, at least relieve the tension of heart and brain. It is tiresome to read overmuch of tragedy. Even melodrama will prove in time as irksome as farce or low comedy. But kindred events travel in cycles, or is it that events as well as histories repeat themselves? Life on one side of this dear old world of ours, ours for an infinitesimal time, as time is reckoned, is filled to overflowing with tragedy, while on the opposite side we as a whole, contemplate vaudeville or opera bouffé. What with this wide divergence of a would-be sane point of view, we are so distraught that readjustments of commercial and sociological conditions are quite beyond the mental capacity of many of us. It was a wise provision of good Dame Nature that this world should provide all sorts of peoples; no two alike. Heredity, environment and compensation are the pivots upon which we revolve, and this speaks for progress. Let us trust to an eventual condition of equilibrium.

In the meantime let us sit fast and grow, broaden and expand into poise of character and unity of purpose, for thus only can we perfect our destiny. Utilitarianism is a beautiful dream perhaps, but let us continue to dream, for was it not through dreams that the prophets and makers of history brought about innovations which have lifted us out of savagery and medievalism, into a life humane in comparison with ancient and more recent histories? The struggle for

power, existence, will go on, but each decade will bring us nearer to the goal of "Peace on Earth, Good Will towards Men."

Hygiene and Sanitation at the San Francisco Exposition.

—It is a common saying that prevention is better than cure. The truth of this maxim was never better understood than it is to-day and as time goes on it is being more fully recognized. Hygiene and sanitation are two most powerful weapons in the hands of those who are fighting to prevent disease, and it follows that teaching how best to carry out the principles of these important subjects is perhaps one of the most essential details of medical education. Although medical men must be the teachers of the theory and practice of hygiene and sanitation, and must themselves be taught when they lack this knowledge, in order to be really successful they must have the earnest cooperation of the public at large. Thus in the first instance, medical men must fit themselves to be teachers and then pass on their knowledge to the community. It is a matter for real regret that the American medical profession as well as the public have been lamentably lax, up to the present time, in acquiring knowledge of hygiene and sanitation, and all that this means to the health and prosperity of a nation. Much as we dislike to admit it it cannot be denied that we have lagged behind many European nations in this respect. Thus, for example, typhoid fever is more prevalent on this continent than in Europe, simply for the reason that Americans have been negligent in setting afoot measures which have been demonstrated to be effectual in preventing

this disease. Happily there are now signs in this country that the "laissez faire" policy, so long in effect with regard to hygiene and sanitation, is dying, and American sanitarians are becoming aroused to the necessity of placing hygiene and sanitation on a more efficient basis.

At the great International Exposition now open in San Francisco, the question of hygiene and sanitation has been given the prominence its importance deserves. The exhibits along these lines should prove the most remarkable object lesson ever given to the American public. Among the various exhibits showing the possibilities as well as recent progress of hygiene and sanitation will be the following: social or sex hygiene; the tuberculosis problem; hook-worm disease; personal hygiene; mouth hygiene; alcohol and other habit forming drugs; mental hygiene; filtration of water and sewage system; tropical medicine and hygiene; infant hygiene; eugenics; and military hygiene.

It will be gathered from a perusal of the foregoing that from the standpoints of hygiene and sanitation, the Exposition will prove a wonderful educative demonstration and one from which the medical profession as well as the general public should gather much valuable knowledge. It is a well known fact that exhibits of this description impress themselves more insistently and clearly upon the minds and intelligence of the ordinary individual than does any amount of reading. Therefore, in addition to being very interesting such practical demonstrations of the good conferred by hygiene and sanitation are highly instructive and tend to diffuse a correct comprehension of the matter in a way possible by no other means.



MEN AND THINGS



"In Truth, A Man."—At the recent testimonial banquet given in honor of Dr. Jacobi's eighty-fifth birthday, it was inter-



esting to note the genuine love entertained for this grand old man of the American medical profession. Not only was it reflected in the words of every speaker, but shown no less conspicuously in the attitude of every person present. It is a fine thing for the whole profession that a man like Dr. Jacobi has lived to reach so ripe an age among us,

and all the while in harness. As one of the speakers at the above banquet so rightly said Dr. Jacobi has been for years a constant inspiration to his students, his colleagues and, in fact, the whole community. Clean, highminded and industrious, he has ever stood for better things, for civic progress and the uplift of his fellowmen. By word and deed he has never missed an opportunity of preaching the gospel of work—honest service for mankind. In every forward movement, he has never failed to do his part, and a writer in the *Survey* (May 8, 1915), very aptly quotes the following words as showing Dr. Jacobi's own views on the relation of the earnest physician to civic matters:

"It is not enough to work at the individual bedside and in the hospital. In the near or dim future the physician is to sit in and control school boards, health departments and legislatures. He is the legitimate adviser of the judge and jury and a seat for the physician in the councils of the Republic is what the people have a right to demand. . . . Let the individual physician not forget

what he owes to his community now. When we are told by Lombroso that there is no room in politics for an honest man, I tell you it is time for the physician to participate in politics; never to miss any of his public duties and thereby make it what sometimes it is reputed not to be in modern life—honorable."

When, years after, his part in political revolutionary affairs had been forgotten or forgiven, continues the *Survey*, and the man had won his spurs in the land of his adoption, an invitation came to him to teach in an important university of the home land. "It took me about a minute to refuse," he tells. "I was, and am rooted in this country that was my ideal when I was young, my refuge when, alone and persecuted, I stole away; and always, clouds or no clouds, my sunny hope forevermore."

The chronicle of positions and degrees which Abraham Jacobi has filled and won would be superfluous in this day. With the deference accorded this man, there is evident also another attitude. Both in public tribute and in the instinctive gathering around him of peers and followers, there may be discerned something very like personal affection. Carl Schurz had the right to voice it:

"I have known and loved him as a man who may be depended on in every respect and in all circumstances."

What higher encomium could be paid to any one than the statement, "he may be depended on in every respect and in all circumstances!" Truly, no finer tribute was ever given by one man to another. The best feature of it, moreover, comes from the way every one who knows Dr. Jacobi accepts it as deserved and true.

If there ever was an illustration of the fact that the real rewards of faithful endeavor—in medicine particularly—are never

found in money or physical wealth, it is shown by Dr. Jacobi's life and work. Enshrined in the hearts of all who know him, this grand old physician finds his recompense in the love of the men, women and little children who have had the good fortune to claim him as doctor, adviser and friend.

"Then, Dr. Jacobi, here's to you. May Time continue to deal kindly with you, and may you stay with us for many years to come as honored and respected physician, fearless public-spirited citizen, and above all, the friend we love and trust!"

Progress in Health Legislation.—Last month we called attention to the bills presented in the New York Assembly with the apparent purpose of emasculating the admirable health laws enacted a year or so ago. At the time of writing it looked as though these proposed measures would go through as they were backed by powerful political influence. Happily the voice of the people was heard and all these bills were signally defeated. As the *Survey* (May 8, 1915), says, much of the credit for the defeat of anti-health measures is due to Senator George Whitney, Chairman of the Senate Committee on Public Health, who took the position that he would not report any bills of an obnoxious character. The medical profession should bear this in mind and neglect no opportunity of standing by Senator Whitney in his laudable efforts to safeguard the health of the people.

Among the measures that passed are the following: a bill striking out the present provisions for the compulsory vaccination of school children, except that when the state Commissioner of Health certifies in writing to the school authorities of any school district or city that smallpox exists in such district or city, the authorities must exclude from school all unvaccinated children (signed by governor); a measure authorizing the Commissioner of Health to combine into one health district any two or more towns, villages or cities within a single county; an act requiring applicants for licenses for milk-gathering stations to furnish the Commissioner of Agriculture with bonds of not less than \$5,000; and a measure providing that physicians shall receive

25 cents for each birth certificate properly and completely made out and registered and for each death certificate made out in accordance with the international list of causes of death (signed by governor).

As the *Survey* well points out, a good bill was lost when the Jones-Tallett measure, supported by the State Department of Education and aiming to "build up the standards of nursing education," failed to pass the assembly. As finally amended it had the support of nursing and other associations interested. The bill fixed standards of training for state registration and limited membership on the State Board of Nurse Examiners to nurses.

One of the measures killed would have abolished the board of examiners of feeble-minded criminals and prohibited operations for the prevention of procreation.

Diet in the Causation of Appendicitis.

—There is no question that appendicitis has been steadily increasing during the past two decades. Some clinicians are inclined to look upon this increase as more apparent than real, and attribute the greater number of cases coming under observation as merely the result of greater accuracy in diagnosis. This conclusion is hardly tenable however, and the majority of physicians are agreed that appendicitis occurs much more frequently to-day than it did twenty or thirty years ago. This problem is intelligently discussed in a recent number of the *International Journal of Surgery* (April 1915) and considerable attention paid to the opinion of a prominent English physician, D. P. D. Wilkie, who says that the increased consumption of meat among the English working class, due to the rise in wages, is responsible for the greater frequency of appendicitis, and especially the severe form, in large industrial areas. The same observation has been made in Germany, and it has also been noted that the disease is relatively much more frequently met with among town dwellers than among the peasant class. Wilkie further calls attention to the comparative rarity of acute and fatal cases of appendicitis among Eastern peoples, who subsist largely on a vegetarian diet, such as the Roumanian peasants and the Turks. His own experiments on ani-

mals afford strong corroborative evidence of the correctness of his views. Thus he found that if the appendix was artificially obstructed so as to be partially filled with fecal matter, changes of a gangrenous putrefactive type were far more apt to follow in protein-fed than in carbohydrate-fed animals, and practically the same result has been obtained by Heile. Wilkie believes that similar changes take place in the human appendix as the result of obstruction with fecal matter consisting largely of proteids, and he therefore considers the urgent gangrenous type of acute appendicitis to be of the nature of acute appendicular obstruction and as a disease of meat-eating nations.

If we accept these conclusions, says the editor of the *International Journal of Surgery*, it is not difficult to understand why appendicitis is so common in our own country where the people indulge so greatly in a meat diet. There is no doubt that animal foods are more prone to give rise to digestive disturbances and putrefactive processes in the intestines than those of a vegetable nature, and that such conditions constitute important predisposing causes of appendicitis. Let us therefore give serious consideration to Wilkie's suggestion, that "in a bulky and mainly vegetable diet lies the chief safeguard against acute appendicular disease in its most severe and dangerous forms."

Bananas Not For Young Children.—

While there can be no doubt that the banana is a very nutritious fruit and under certain circumstances may be eaten by adults not only without the slightest harm but often with real benefit, there are excellent reasons for prohibiting its use by young children and the sick. A writer in the *Nurse* (May 1915) discusses the question and calls attention to the fact that fresh ripe bananas contain about 26 per cent of solid material. A comparatively large proportion of this solid matter is carbohydrate; there is also a small quantity of protein, a smaller amount of mineral matter, and some cellulose. The composition of the banana indicates that it is a nutritious and desirable food—and so it is in those countries where the fruit ripens naturally. But when cut for

shipment the bananas are very green; they are kept in cool storage rooms and do not ripen naturally. The fruit sold in our markets is imperfectly and unevenly ripened.

Imperfectly ripened bananas contain a large percentage of raw starch, and raw starch cells are not readily digestible. A banana which throws upon the child's stomach a burden of indigestible starch and tough cellulose starts a rebellion in that organ. In cooked bananas the starch cells are broken down and the cellulose softened, making them more digestible, but as a raw fruit for young children bananas should be excluded from the diet. Pediatricists do not include bananas in the child's diet even after the sixth year.

The American Fund for Belgian Physicians—Supplemental Report.—Last month we reported the discontinuance of further collections by the Committee of the American Fund for Belgian Physicians, and recommended that all future contributions be sent to Dr. F. F. Simpson, 7048 Jenkins Arcade Bldg., Pittsburgh, Pa., Treasurer of the Belgian Medical Relief Committee. While the April edition, making the above announcement, was on the press, several contributions were received by mail. As these were sent before our announcement was issued and came to hand in time to be included in our Fund, they were gratefully accepted and we take pleasure in crediting them as follows:

Previously acknowledged	\$1,520.25
Dr. R. M. Eccles, Blissfield, Mich.,.....	5.00
Mr. Eulogio Dangtaman, Angeles, Pampanga, (I. F.) Philippines .....	.50
Mr. Jorge Panlilio, Angeles, Pampanga, (I. F.) Philippines .....	.50
Mr. Leandro Panlilio, Angeles, Pampanga, (I. F.) Philippines .....	.50
Dr. P. R. Panlilio, Angeles, Pampanga, (I. F.) Philippines .....	.50
Dr. Charles M. Chandler, Salt Lake City, Utah	5.00
West End Medical Society of the City of New York, New York City.....	25.00

Total\$1,557.25

To the above contributors we extend the same sincere gratitude we feel toward all others who have so generously helped us. May every one who has aided this undertaking in any way be rewarded in full and abundant measure.

From this date (May 25) all further receipts will be turned over to Dr. Simpson, Treas. of the Committee still at work.

Respectfully submitted,

H. EDWIN LEWIS,
Secretary.



SOME WAR TIME EXPERIENCES IN THE NORTH OF FRANCE.¹

BY

HENRY L. SHIVELY, M. D.
New York.

The summer of 1914 will long be a memorable one for the American tourist who happened to be in England or on the continent during the events which led up to and attended the beginning of the great war. A thoughtful observer might have had some misgivings as to the meaning of Germany's elaborate military preparations and as to the sequels which were to follow the assassination of the Archduke Francis Ferdinand and his consort. This was really the spark which fired the mine and wrecked the European concert that had with difficulty survived the two Balkan wars. The holiday maker and casual tourist, however, carefree and foot loose, is more intent on his itineraries and the study of good automobile roads, hotels, and the selection of picturesque scenic routes than upon strained international relations and the complications of foreign politics. For most Americans in Europe the crisis seemed to develop with alarming suddenness and the hapless traveller found himself literally stranded a long way from home, and in most cases with little ready money, his let-

ters of credit or express checks being as worthless for negotiation as the "scrap of paper" of a certain famous diplomat. In the first days of August the United States Consulate at Rouen was besieged by 2,000 panic stricken Americans all clamorous to depart on the first steamer leaving Havre. When the storm broke, I was in the north of France spending a few days at a little watering place on the Norman coast intending to make a tour in Brittany and Normandy. V— is a picturesque, mediæval town of a thousand inhabitants with as many more visitors during the summer months. It has numerous attractive villas, a little casino, a bathing beach, a thirteenth century church, and a quaint market place. With its chalk cliffs, its old mills, and beechen forests it is not unlike scores of other pleasant towns in this rich and fertile part of France. V—is a favorite resort of artists and was at one time the residence of Victor Hugo who wrote his "Toilers of the Sea" while living here. The peaceful routine of social life and the season's gaiety were rudely interrupted on the first of August by the town crier who appeared in the church square and after a preliminary tattoo on his drum, read to the hurriedly collected and expectant crowd of villagers, peasants and visitors the proclamation of mobilization. This meant for all the men of military age in France the reporting for duty within four days to the posts assigned

¹Read at a meeting of the West End Medical Society, April 24th, 1915.

them and for the tourist a moratorium which suspended the banking operations of international exchange and reduced him for an uncertain period to the cash contained in his pockets. Foreigners were required under penalty of arrest as spies, to immediately apply at the *Mairie* for permits of residence and passports. When I received mine I was treated with great courtesy and was informed that travel in two days

for the front, the local doctor, a fine type of rural Norman professional man, turned over to me his office and equipment.

Through the accident of a readymade practice thus thrust upon me, I had a somewhat unusual opportunity during two months and a half to observe intimately conditions of French life in the country and in the town, and the behavior of the people in the serious situation which had



Fig. 1. The Normandy Coast.

would be impossible as the train service would be employed solely for the transportation of troops and munitions of war. The mayor asked me if I would be willing during the period of my stay at V— to replace their local physician who was called to the colors. As the town with several adjacent villages and the surrounding country side was thus left without other medical provision I could not but agree to serve in the emergency. I was supplied with the necessary authorization to act as a French physician and before his departure

arisen. After the first hours of excitement and uncertainty, no one could have failed to be impressed by the admirable spirit, the calm dignity and heroism of both the men and women, and especially by the fortitude and common sense of the latter who saw, without a tremor of fear or hysteria, the departure of their husbands, sons and brothers to meet the invaders as their fathers had done a generation before in 1870.

One of the first cases I was called to attend professionally was a young man stay-

ing with his wife and two children near my hotel. He had been mobilized and his heavy military shoes studded with new hobnails had caused him to slip on the cobblestones of a badly paved street, and he had sustained a fracture of both bones of the leg above the ankle. Feeling ran very high at that time, and he was unjustly charged with having intentionally broken his leg to

combined with elation at the new honor which had been bestowed upon him produced an epileptiform seizure, and he had fallen unconscious in the street. There was some delay before I reached him and I found that I had been anticipated by the village midwife who had copiously bled him from the ear—a method of treatment which in this case was eminently success-



Fig. 2. A Street in V—.

escape his military duty. A somewhat humorous experience was the case of a reservist, a huge innkeeper who had been appointed a membre of the *garde champêtre* to patrol the roads and approaches to the town. Too free indulgence in alcohol, a vice which frequently obscures the many good qualities of the Norman peasantry,

ful and which I understand is held in high popular esteem. A day or two later a young artillery officer with incipient pulmonary tuberculosis was invalided from his company upon my certificate of disability. Among the peasant population there were many cases of digestive disturbances and diarrhea due to bad dietetic habits, and a

majority perhaps of the children require operation for relief of adenoids and hypertrophied tonsils. In general the run of cases was not very different from what might be expected in an American town of similar population. I took care of cases of whooping cough, acute articular rheumatism, tonsillitis, sciatica, epilepsy, anemia acute bronchitis, neuralgia, laryngitis, rheumatoid arthritis, a Colles' fracture, eczema, leg ulcers, tuberculous joint disease, and a

was able, however, to relieve many aching teeth and win the gratitude of their owners by packing cavities with cotton pledgets soaked in a mixture of carbolic acid, tincture of iodine and oil of cloves. A somewhat unusual case was that of a young, unmarried woman, a consumptive with repeated hemorrhages from the lungs, who was the mother of seven illegitimate children. In France the government grants to a *filie mère* a pension of fifteen francs a



Fig. 3. Peasant Cottages.

number of minor surgical cases. A fair visitor from Paris naively confessed that the salpingitis from which she suffered was caused by privileges she had too generously granted her fiancé. No small amount of suffering is caused among the country population by the universal neglect of their teeth. The doctor for whom I was acting was far more skillful than I in the use of a kit of dental instruments which formed a most important part of his office gear. I

month for each child she personally cares for at home and this unfortunate girl had adopted "illegitimate maternity" as a career and means of livelihood.

French doctors are past masters in the art of palatable prescribing and the patient expects to have his *potions* agreeably flavored with pleasant tasting syrups and cordials to resemble a cocktail or after dinner liqueur. I am sure that I shocked the pharmacist at V— by what seemed to him

my brutal disregard of this first principle of his art. The patients too complained of the bad taste of the American doctor's medicines. In spite of this fault, however, and my imperfect French, I succeeded in obtaining some measure of their confidence. The metric system soon presented no difficulties and from my experience with it, I am convinced that its general adoption in this country would be in the interest of greater accuracy and ease, and simplicity in prescribing.

physically degenerate scion of an ancient line. He had a city house in Paris, a handsome villa at V— and a winter residence at Nice. When he asked me for my bill I told him, as I did all for whom I cared, that he could pay what he was in the habit of paying my predecessor. With a grand air and a magnificent dramatic flourish he told me in the spirit of *noblesse oblige* that he would pay me five francs a visit but he cautioned me that I must not think of charging the villagers anything like this



Fig. 4. A Village Scene.

Professional fees in France outside of Paris are generally very small and in rural practice it would be impossible for a physician to live upon his meagre professional income alone. The ordinary fee at V—was three francs for a visit at the house and two at the office. Summer visitors are charged five francs and three, except foreigners who usually pay more. My star patient was a dapper little baron, the

amount. For the sake of the stability of the Franco-British alliance it may be hoped when he visits London he may have no occasion to consult the guinea-pigs of Harley Street. During my stay I probably had rather more than the usual amount of practice on account of the disturbed condition of the country and the number of visitors. I am sure it would not be possible for a doctor in this part of France

to make as much as a thousand dollars a year. It is regularly expected that a French professional man, the village physician, lawyer or notary, should have an independent income apart from professional sources. French parents skimp and save for the future of their children. In consequence nearly everyone is a *rentier* or capitalist in a small way. When the young physician marries, his wife brings him a dowry and his career affords him a position of honor and influence in the com-

during the Franco-Prussian War. His devotion to his poor parishioners and gentle acts of charity and generosity reminded one of the numerous types of characters portrayed by Balzac in his faithful pictures of village and country life in France.

Toward the middle of August we began to have the aftermath and evidence of suffering and hardships in the train of the rapid advance of the German armies through Belgium and northeastern France. Our peaceful little town was soon crowded



Fig. 5. A Group of Wounded.

munity, and an opportunity for useful service, the emoluments of which are, however, intended to be a mere supplement to his means of living. The village doctor is in charge of the *assistance médicale* which cares for the poor without charge, medicines and dressings being paid for at cost from the funds of the commune on his certificate. I was aided in the care of these charity cases by a very dirty but lovable old *curé*, who had been an orderly and nurse

with refugees who had fled before the storm. Women, children, old men and boys under military age arrived in farm wagons, Norman carts, and automobiles with their live stock and scanty possessions seeking an asylum away from their ruined homes. A son of the mayor of V— was taken a prisoner at the siege of Maubeuge. My first soldier patient was a young man who had fought at Charleroi and Mons. He was a nervous wreck from the hard-

ships he had endured, and had sustained an injury to the tendons of his ankle which unfitted him for further service.

Five miles from V— two military hospitals were fitted up, one in a large hotel, the other in the general local hospital under the supervision of the Catholic sisters. Here I saw many cases of gunshot rifle wounds and the effects of shrapnel and shell fire. The usual method of treatment, as in other hospitals, which I afterward visited, was the application of tincture of

were not so fortunate, their multiple and extensive contused and lacerated wounds were usually infected and more slow in healing. The only medical patient I saw in the hospitals was a young Englishman convalescent from a severe attack of typhoid fever with which he had been seized almost immediately after disembarking from the transport in France.

In September after the battles of the Aisne, I saw at Motteville on my way to Rouen sixty men just off a battlefield with



Fig. 6. Trophies of War.

iodine to uninfected wounds and free incisions and peroxide of hydrogen for suppurating wounds. Most of the cases did surprisingly well. This was before the time of long continued fighting in the trenches and most of the wounds were not infected. Many were in the hands and feet and when bones and joints were not injured the patient was often practically well in ten days or two weeks. Men injured by shrapnel and fragments of shells

their original emergency dressings mostly applied by themselves or their comrades. A large proportion of their number were Turcos from Algiers and Morocco. At Rouen I had a letter to the commanding general of the department whereby I was enabled to visit nine great military hospitals. The cases seen here in these big base hospitals were more serious than those at V—, and included many penetrating wounds of the chest, injuries to the head, and bad in-

fect cases. I saw no abdominal cases as they rarely get beyond the field hospitals. I especially remember two extraordinary cases of general emphysema following wounds of the lung. The faces, necks, upper extremities, and trunks of these men above the groins were enormously swollen by their air distended tissues. There was everywhere a scarcity of skilled nurses as there are practically no training schools in France such as are numerous in this country and in England. Until recently the care of all patients in French hospitals has been entrusted to the nursing orders of Catholic sisters. The separation law of a few years ago caused the expulsion of most of these nursing orders from France and there has really been no one to take their places. Most of the so-called Red Cross nurses have been created by pinning an emblem and brassard on the sleeve of an inexperienced volunteer who with the best intentions, cannot replace a real nurse. In the majority of the hospitals, the medical is far better than the nursing service.

One of the largest of the military hospitals at Rouen was installed in the normal college for girls and it was a curious transformation. The lecture halls, recitation rooms and even the virginal precincts of the little individual dormitories of the students were full of wounded soldiers and officers attended by the staff of teachers and female professors, now converted into Red Cross nurses. I saw the daughter of a general with several society ladies bravely dressing a soldier who had lost most of his perineal anatomy through the explosion of a shell.

A small hospital in a beautiful garden on the banks of the Seine had been fitted up and was maintained at the expense of a patent medicine manufacture who had made

a fortune exploiting a remedy for female complaints. This widely advertised nostrum is the equivalent in France of our own Lydia Pinkham's vegetable compound. One only misses the prim, rather severe features of the American benefactress of her sex which are replaced on the bottle of French stuff by the portrait of the venerable Abbé Soury. From the newspapers and bill-boards the benevolent face of this holy man beams with serene and philanthropic joy—doubtless at the thought that his celibate efforts and cloistered life should have given to his suffering sisters an infallible cure without operation for all menstrual irregularities, fibroid tumors, cancers, hemorrhoids and the untoward sequelae of childbirth. A sidelight on forty-five years of German occupation of Alsace was afforded by a conversation I had with a young man among the wounded in this hospital. At the beginning of the war he had run away from his home at Mülhausen, had escaped across the border and had enlisted in the French army. He could not speak a word of French but assured me in an apologetic tone that only his tongue was German, that his heart was all French. Speaking of the hearts of the French soldiers, the story is told of an English lady loyal to the allies of her country who said it was all wrong to make facetious allusions to their red trousers for they covered hearts as strong and brave and true as ever beat!

The English had intended having a large base hospital at Rouen but the rapid invasion of northern France and the occupation of Amiens by 40,000 German troops caused them temporarily to select a less threatened site. The ancient capital of Normandy, a city of great wealth and architectural interest, expected to be overtaken by the same fate as Amiens and many of the

population fled in the early days of the war. Among the devout and patriotic inhabitants who remained, the belief is general that the invocations and vows offered at the shrine of Joan of Arc succeeded in saving the city from invasion through her miraculous intervention. While I was there, the streets presented a forlorn and deserted appearance, many of the large shops and factories were closed, and all business and social life had ceased. One day several hundred wounded German prisoners were transported on trolley cars from the railway station to the hospital. These were the only Germans I saw.

The Norman people in appearance are quite different from the inhabitants of central and southern France. Many of them are tall and fair, have large frames, blue eyes, rosy complexions and light brown hair—a type familiar in England, a fact readily accounted for when it is remembered that it was from this part of France in the eleventh century that William the Bastard, a descendant of Rollo the Northman, crossed to the shores of Kent with his crowd of needy adventurers, defeated the Saxons at the Battle of Hastings, and laid the foundations for the estates and privileges of the English aristocracy. In disposition the Norman French are shrewd and quick-witted, and have a fine talent for minding their own business. They also possess an almost Yankee like appreciation of humor. They are friendly without being very sociable, for they are almost too frugal to indulge freely in open-handed hospitality. The women are excellent housewives, good cooks and devoted to their husbands and children. It is sometimes said that the French have no word in their language for home but a Frenchman's *foyer* is as full of tender meaning, and there

clusters about it as many associations and as much sentiment as is contained in the English or American home. The provincial Frenchman is far removed from the conventional type we associate with the gay life of Paris and the Lothario of the yellow covered novel. He is an admirable husband and father, not above assisting in all the homely duties of his well ordered house, and is usually quite willing to be rather dominated by his energetic and capable helpmeet. Both Monsieur and Madame are fond of growing artichokes and salads in the garden and training a peach or pear tree over the wall on the southern exposure of their house. Besides the children and husband's and wife's relatives the circle of their domestic affections usually extends to include a dog and the harmless, necessary cat, but to the sacred precincts of the French *foyer* are rarely admitted mere human acquaintances or the "stranger at the gate."

Again at Dieppe I saw more hospitals and more wounded soldiers. The great hotels on the beach and the magnificent casino at which but a few weeks before, baccarat, the little horses, roulette and the croupier were much in evidence were now converted to stern military uses. There was a dreary monotony about it all after the novelty had worn away. Under present day conditions war has little of the glamour of romance or glory. Most of the soldiers with whom I talked had never even seen a German or Austrian. A puff of smoke in the distance, the screaming of a shell overhead, hard marches, poor and insufficient food, filth, and vermin—these were the ordinary experiences of the gallant and uncomplaining little *piou-piou* in the red pants, which too often make him a shining mark for the long range guns of the

enemy. On the grounds of the archiepiscopal palace at Rouen I met and talked with a good many Belgian refugees and from their reports and what I heard in other parts of France, I do not think the tales of brutality and cruelty which reach us have been exaggerated. The lasting impression that I received from my limited experience and observations in one small nook on the border of the great war zone was that for Belgium and the invaded provinces of France at least, the ravaging of the country and the sufferings of noncombatants have been an unprovoked and criminal outrage rather than the honorable warfare of a civilized and worthy foe.

303 Amsterdam Avenue.

THE TREATMENT OF DIPHTHERIA CARRIERS BY MEANS OF DIPHTHERIA ENDOTOXIN.

BY

R. TANNER HEWLETT, M. D., F. R. C. P.,
D. P. H.

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The problem of the "diphtheria carrier" and how to deal with him is perhaps one of the most serious with which the public health administrator is brought into contact. Infinitely commoner than the "typhoid carrier," the isolation of the diphtheria carriers, which occur in every administrative district, for periods of weeks or months entails an expenditure of some moment, necessitates, it may be, the occupation of beds which can ill be spared, and, in the case of adult carriers, may upset domestic relationships and home life to a very trying degree. It is of course with

the carrier who becomes a carrier after an attack of diphtheria that we have principally to deal—carriers who have become such without any recognized or recognizable diphtheritic attack do not often come under the purview of the public health administrator. It will be interesting first of all to obtain some idea of the frequency of the occurrence of the carrier state after an attack of diphtheria. We may define the carrier state as the persistence of diphtheria bacilli in the throat or nose (rarely in other localities) after convalescence is established in an uncomplicated case: this will usually mean after a period of from four to six weeks from the commencement of the attack. The persistence or absence of bacilli must be established by bacteriological examination of the throat and nose; the absence of bacilli should be assumed only after two, or preferably three, examinations made at intervals of two or three days have proved negative. The true Klebs-Löffler bacillus alone need be taken into account and the presence of the Hoffmann bacillus may be disregarded.

Graham Smith has collected the records of some 9,000 cases of diphtheria examined by different observers. They show that in three weeks about 30 per cent. of patients are free from morphologically typical diphtheria bacilli. In 20 per cent. the bacilli persist for four weeks, in 16 per cent. for five weeks, and in 11 per cent. for seven weeks. One per cent. harbor them for fifteen weeks, and in exceptional cases they remain in the throat for thirty weeks, though even more prolonged periods of persistence are recorded.¹ Moreover, as regards diphtheria, in those cases in which the bacilli persist they are usually virulent (in 67 out of 78 cases, Cobbett), while in infected healthy contacts, the bacilli found

are in almost half the cases non-virulent to the guinea-pig.

Various expedients have been tried in order to get rid of the persistent diphtheria bacilli, of which the use of various antiseptic lotions, gargles and paints hold a prominent place. It probably does not much matter what antiseptic be employed so long as it is an efficient one and is used carefully, frequently and persistently. Not only should the throat be well gargled, sprayed or painted, but a nasal douche should be administered so as to wash out the nose and naso-pharynx. Any catarrhal condition of the nose, naso-pharynx and throat should be appropriately treated and adenoids and enlarged tonsils removed, for an unhealthy condition of these parts frequently seems to favor the persistence of diphtheria bacilli. It should be remembered that antiseptics made up into paints with glycerin or oil may have little germicidal power.

The use or not of antitoxin probably has little influence on the persistence of bacilli (most cases will now be treated with antitoxin). The subsequent treatment with antitoxin when the carrier state has become established is of no value, and if the case has been treated with antitoxin during the attack, the risk of the development of anaphylaxis with serious symptoms must be borne in mind if further antitoxin be administered. Behring introduced the use of tablets of desiccated antitoxin, slowly dissolved in the mouth, as a means of treatment but it has proved quite unsuccessful. A vaccine prepared with diphtheria bacilli is another means that suggests itself, but this does not appear to have been given an extended trial and in the few cases known to the writer in which it was used it proved unsuccessful.

In the preparation of such a diphtheria-bacillus vaccine, the patient's own bacillus might preferably be used and be grown on serum or blood—or serum-agar. The growth after collection should be killed by heating to 60° C. for half-an-hour, then carefully washed two or three times by centrifuging with sterile physiological salt solution so as to remove any adherent toxin, and subsequently standardised so as to contain say 20,000,000 bacilli per cubic centimetre, this being the dose.

The failure of the various methods above detailed induced the writer to suggest the use of a "diphtheria-bacillus-endotoxin" for the treatment of these diphtheria carriers. I had found that bacterial endotoxins, such as the staphylococcus endotoxin, produced an even more marked effect on the opsonic index² than an ordinary staphylococcus vaccine and apparently without nearly so much "negative phase" when large doses are administered. The endotoxin is composed of the intra-cellular constituents of the bacillus obtained by disintegrating the bacterial cells by grinding, by the Macfadyen method.³ This consists in obtaining a good bacterial growth on blood or serum-agar, collecting it, washing it by centrifuging two or three times with sterile physiological salt solution *without heating*, and then grinding in a special machine⁴ after the bacterial mass suspended in salt solution, has been frozen by the intense cold produced by liquid air or by ether and carbonic acid snow. After thawing, the fluid is filtered through a small Berkefeld filter candle so as to remove any whole bacilli that may have escaped trituration and the fluid is diluted so as to contain 5 milligrams of bacterial material per cubic centimetre: this is arrived at by drying *in vacuo* a measured volume of the fluid and weigh-

ing. A little antiseptic, e. g. trikresol, may be added and the liquid put up in ampoules. All the operations must of course be carried out aseptically and the fluid after tubing should be tested for sterility. This endotoxin solution seems to keep well in a cool and dark place: sometimes a deposit after a time occurs as a gummy mass which renders the fluid unusable: this seems to depend on the kind of glass of which the ampoules are composed, for it takes place with some ampoules and not with others.

This endotoxin was first of all used by the writer in the treatment of diphtheria carriers at Crogdon Borough Isolation Hospital, Surrey, England, (by kind permission of the Medical Officer of Health, D. Meredith Richards,) in conjunction with D. Nankivell, the medical officer in charge.⁵

In all, we treated 18 cases in which diphtheria bacilli had persisted for weeks or months after an attack. Of these, 13 cleared up after from one to three doses of the endotoxin, but in five the bacilli still persisted. As regards the latter, however, it is to be noted that they were the first to be treated, before we had had any experience of the "remedy," and the doses of endotoxin were smaller than in the successful cases.

Since these were published, I have treated five more cases of diphtheria carriers after an attack.⁶

Of these, four cleared up and one did not after the use of the endotoxin.

Of 23 cases, therefore, 17 became free from bacilli and six did not lose bacilli after treatment with endotoxin.

It is, of course, impossible to say that some of these cases would not have cleared up without treatment, but my impression certainly is that the disappearance of bacilli

in perhaps at least half the cases were directly due to the endotoxin treatment. At least, I think, that a case has been made out that warrants a further trial of the endotoxin.

The method of treatment I now pursue is as follows. The first dose of endotoxin is 2.5 milligrams; this is followed after an interval of 7-8 days by a second dose of 5.0 milligrams, and, if necessary, by a third dose of 7.5 milligrams after a similar interval. The endotoxin is injected into the muscles in the upper arm or between the scapulae, it causes little or no general reaction but gives rise to some redness, tenderness and swelling at the seat of injection which soon passes off. Bacteriological examinations are made at intervals of about three days, and no case is considered to be free from bacilli unless three successive examinations prove to be negative.

REFERENCES.

¹"The Bacteriology of Diphtheria," Nuttall and Graham Smith, 1908, p. 421.

²See *Proc. Roy. Soc. Lond. B.*, Vol. 81, 1909, p. 325, and *Proc. Roy. Soc. of Medicine* (Pathological Section) April, 1910.

³See Barnard and Hewlett, *Proc. Roy. Soc. Lond., B.*, Vol. 84, 1911, p. 57.

⁴See "The Cell as the Unit of Life," Macfadyen and Hewlett, p. 274.

⁵See *Lancet*, July 12, 1912, p. 143.

⁶*Ib.* July 28, 1913.

A Rare Cause of Pneumothorax.—A case of pyopneumothorax persisted in spite of all treatment. Upon opening the cavity a macerated intestinal worm was found at the bottom of the cavity as the cause of the condition.

Ipecac.—An excellent emergency remedy, although a trifle old-fashioned is ipecac. In small doses it loosens bronchial secretions without nausea. In fuller doses it relaxes in convulsions, croup, hysteria, rigid os and every type of colic accompanied by spasm.

THE DIAGNOSIS AND TREATMENT OF CHOLECYSTITIS.¹

BY

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The gall-bladder is a thin-walled, blind sac with a precarious blood supply. Although it has less lymphatic tissue and activity than the appendix, it still is readily infected and holds it, and, fortunately like it, can be removed from the body without noticeable harm. Nevertheless it has a function and is not a rudimentary organ. While the liver forms bile as a continuous process, about a liter in twenty-four hours, there are times when a large supply is requisite and the gall-bladder acts as a reservoir to meet the requirements of this active digestion. Added to this function is that of a tension reliever to the common, hepatic and pancreatic ducts, and that of a generator of protective mucus, which by dilution and inhibition, lessens the danger of producing those pancreatic complications that sometimes result from a chance entrance of bile into the pancreatic duct.

The gall-bladder possesses the usual coats of mucous membrane and part of the surface has a peritoneal investment. On close examination the mucosa presents small invaginations, the so-called Luschka's canals or diverticula which, no doubt, have to do with the development of pathological conditions. My own belief is that the Luschka's crypts themselves are pathologi-

cal, occurring as a development in chronic cholecystitis. I have not observed them in gall-bladders of the young, and in but few normal sacs of those older I have seen. They are not found in rabbits or other inferior animals, but can be made to take place when the gall-bladder is infected by injection of living bacteria, particularly the typhoid bacillus.

It is interesting from a clinical standpoint to note that every process of the appendix occurs in the gall-bladder—catarrhal, suppurative, ulcerative, hemorrhagic, pseudomembranous, phlegmonous and gangrenous. Even the chronic fibrous and obliterative appendix has its counterpart in the gall-bladder. This is important to remember when we recall that disease of both of these organs is so commonly met with at the same time and the difficulty of differential diagnosis between them.

We can now all agree that cholecystitis is due to bacterial infection. This is not always possible of demonstration by examination of bile alone, for usually the bacteria are in the walls of the sac, and the contents sterile. Close examination of the center of gall-stones often shows a streptococcus in pure culture, but sterile bile and infected sac wall. The easiest way for this infection to reach there would seem to be by a retrograde transport along the bile ducts from the intestine, and this can occur, but experimental medicine has now proven Deaver's view in regard to the pancreas as positively true here too—namely, that the infection reaches the gall-bladder with the bile directly from the liver. The liver here acts as an organ of body-drainage, evicting bacteria from the general or portal system. Bile has a very weak antiseptic power, and for some bacteria is even a good culture medium. This is proven in

¹Read before the New York County Medical Society, April 23, and the New York Polyclinic Medical Society.

cases of typhoid fever and certain infections of a septicemic nature during the acute and post-acute stage, and, as I have recently shown, may cause symptoms years after with the production of what I have designated as post-typhoid or post-infective dyspepsia, which is due to cholecystitis plus infection and bile stagnation. Such stagnation easily occurs by a hindrance to the outflow of bile. The cystic duct is so constructed that it can become blocked easily, while the common duct has not only a relatively tiny opening, but in two-thirds of cases runs through the substance of the pancreas and is subjected to pressure when that organ swells.

The most frequent association of cholecystitis is with gall-stones. By interfering with drainage of the gall-bladder or by direct irritation, gall-stones favor inflammation and thus precipitate acute exacerbation on a chronic condition, or keep the viscus in a subacute inflammation. Concerning all about the origin of gall-stones there is still some mystery. Whether it is necessary to go as far as Aschoff and Bacmeister suggest in their cholesterin diathesis theory seems questionable. It is more reasonable to keep to such facts as have been and can be proven, namely, that they occur in the sequence of infection, stagnation and precipitation. As a fluid, bile is so highly charged with salts that precipitation around a focus can readily take place, and since small particles of detritus of the mucous membrane, the typhoid, paratyphoid, colon organisms, and streptococci have all been found in the center of the stones, one need not go beyond the gall-bladder for a cause.

Once formed, such stones may remain dormant in the gall-bladder for a long time. Such cases, excepting when biliary colic or

a large number of small stones, or a very few large ones, are present, may never give any symptoms, either direct or referred. But when considerable infection exists in the sac walls, the gall-bladder seems to become intolerant, sensitive, adhesions occur, and then there is no distinct dormancy of symptoms. My post mortem work suggests to me that the so-called "innocent" cases are those with only a few stones, so placed that they do not rise to the neck of the cystic duct, in a gall-bladder that is not much infected. In the majority of instances, however, sooner or later something will happen. It may be a chronic dyspepsia, an attack of biliary colic, an obstruction of the cystic or common duct, pancreatic disease, or it may be the growl of cholecystitis, the subject of this paper.

While in a clinical sense gall-stones are the most important factor in bringing out cholecystitic symptoms, we must not forget that such symptoms can occur without gall-stones being present. We have seen the instances of typhoid, septicemia, pneumonia, food-poisoning, and almost all infections in which it does occur in an acute manner. It may be so mild as to give none or but transitory symptoms at the time, and years afterward when the stones are present, no history of the original infection can be gotten. Or it may be severe enough at the time to draw one's attention directly to it. Such a case resembles an attack of biliary colic; pain, tenderness, swelling in the region of the gall-bladder, with rigidity of the right rectus and leucocytosis. There may be enlargement of the liver, the gall-bladder be felt, jaundice occur if a cholangitis exists, and possibly some time afterward a dyspepsia from the infected sac and the adhesions. Thus it is wise when a prolonged dyspepsia and tenderness in the

region exists that we do not diagnose "gall-stones." It is better to say "an inflamed gall-bladder," or, as is my choice, "pathology of the gall-bladder." In a case where the symptoms have been standing for some years, where the history of infection is distinct, and the symptoms came on soon after this infection, we may be bold enough to say "cholecystitis with stones." In such instances stones are commonly present, but not always. Even in a case long after typhoid I hesitate to mention stones, because there is the occasional one without them in which the cholecystitis develops from a chronically diseased appendix or inflamed hemorrhoids.

The gall-bladder in chronic cholecystitis may be large and filled with foul-smelling bile; it may be normal-sized and slightly thickened, containing bile and an infected mud; or it may be small, thick-walled, whitish, shrunken, containing a thick bile nearly of the consistency of soft India rubber. More interesting, however, is the strawberry appearance of the mucous membrane, in which one sees a dotting over of tiny yellow specks. This so-called "strawberry gall-bladder," next to the change in the wall and the presence of stones, is the most characteristic pathology, and in my opinion warrants surgery whenever it is met with.

Suppurative cholangocystitis, or empyema of the gall-bladder, rarely occurs without stone, and is most likely to occur in the impacted stone cases. As an acute condition it is one of the most fulminant, ending in two or three days in rupture of the gall-bladder and general peritonitis. Less severe cases are met with symptoms like that of a localized peritonitis; pain, tenderness and rigidity of muscles in the upper right quadrant. The case may be less like a peritonitis and more like a biliary colic.

Then one meets with fever, accelerated pulse, vomiting, leucocytosis, and rarely jaundice. In the latter type of case not much spasm of the abdominal muscles over the gall-bladder is met with, but if the warmed hand is laid flat and gently on the abdomen one may feel the distended gall-bladder underneath. If examined for directly with the tips of the fingers one is not so liable to feel it, or an indistinct mass is felt continuous with the right lobe of the liver too closely simulating a Riedel lobe to be sure either way. Sometimes if one crouches down on a level with the patient or views him over the chest, the swelling of the gall-bladder can be seen. At operation such a gall-bladder is found tense and distended with a mucopurulent fluid free from bile. As I stated before, stones are usually met with in these cases, and most of them are due to the bacillus coli or typhoid. Phlegmonous and gangrenous cholecystitis cannot be differentiated clinically from the suppurative. Then, too, one need spend no time trying, as the treatment is the same. They usually give more severe symptoms than empyema, and an impacted stone is usually met with likewise.

The acute forms of cholecystitis can readily be mistaken for appendicitis, because I have seen cases in which the pain was entirely referred to the right lower quadrant. Likewise I have seen cases of appendicitis in which the pain was referred to the gall-bladder region. In the acute cases, local tenderness and spasm may help one to a diagnosis of the organ involved, but in the chronic dyspeptic case this may be quite impossible without the X-ray. I may mention further that I have seen four cases of empyema of the gall-bladder diagnosed as perforated gastric or duodenal ulcer in all of which differentiation was ex-

ceedingly difficult. Another type of case it may simulate is uremia, for with the persistent vomiting, albumin and casts may be met with in the urine. The condition may be mistaken for a hematogenous infection of the kidney described by Brewer. In this condition are present, usually, a septic intoxication, pain, generally on the right side and in the flank, and going into the chest, chills, high fever, delirium, great prostration, and perhaps the finding of an albuminous urine containing red and white cells. Cystoscopic examination usually reveals a scanty flow of urine from the kidney infected. More than that, these cases are generally present in people somewhat younger than those having gall-bladder conditions of the serious kinds, the average age being about 25. Chronic empyema and chronic hydrops may give rise to a tumor of such size and density that a diagnosis of enlarged kidney, hydronephrosis, or ovarian cyst be made instead. Upon inflation of the bowel the colon tympany is in back of the tumor if it is the gall-bladder and in front if it is the kidney. Then, too, a distended gall-bladder can usually be pushed over to the left, or be spilled to that side by posture. I desire particularly to speak of the diagnosis of the common cases of cholecystitis in which gall-stones may or may not be present, since these make up a considerable proportion of those I see in my office work, and too few of which diagnoses are being made. Leaving out of consideration the cases in which definite symptoms referable to the gall-bladder are met with, either at the time seen or deduced from past history, there are many having chronic cholecystitis in which the symptoms are entirely dyspeptic in the subjective way. The distress described is that of flatulency, various nerv-

ous phenomena, weight and pressure after meals, perhaps some indistinct pains in the upper right side in front, side, or back and referred to the epigastrium, or into the back or shoulder, constipation, and with or without hyperchlorhydria. It differs but little in symptoms from the condition met with in chronic appendicitis, the history being quite as long. These are more typically cases of dyspepsia, and at first impression are apparently medical cases. Not a few have been treated by many hands, test-mealed, lavaged, dieted, alkalined, given sedatives, rest cured and not a few have had their appendices taken out. They float around from one to another from one clinic and hospital to another, from one stomach specialist to another, and even from one surgeon to another, the symptoms persisting all along the line. And yet as a class they are not difficult to diagnose. The history of them is usually suggestive enough in itself which often their well nourished bodies make still plainer.

There are three procedures of physical examination that are distinctly helpful, the sign that Robson described, and two I have employed myself. The Robson point is a tenderness on deep pressure midway between the tip of the right ninth costal cartilage and the umbilicus. The lower border of the liver being so variable in its position in the abdomen this sign cannot be depended upon uniformly. I would suggest that instead of making point pressure, the ulnar side of the extended hand be pressed between these two points along the entire distance. If the tips of the fingers can be impinged under the ribs, the ulnar side of the hand can be pressed over the ducts as well, and since these are tender sometimes, the value of the sign is enhanced.

The two signs I am particularly interested in are carried out as follows: Map out the position of the lower edge of the liver in the abdomen by very superficial and gentle palpation, and when it is under the costal arch by percussion. Making note of where it is, the tips of the fingers of one hand are sunk deeply, directly below it in the gall-bladder region. One can stand at either side facing the patient, and it is best to re-enforce the pressure downward with the other hand super-imposed. On deep inspiration the liver is driven against the maintained position of the tips of the fingers causing distinct pain. By repeating this several times, and noting the absence of pain on the other side, a tender gall-bladder is easily elicited. It is important that the gall-bladder be pressed between the tips of the fingers and the liver, and the median fissure or below the tip of the ninth costal cartilage helps to guide one. The second sign is somewhat the same and particularly useful when the liver is high or small. Here the examiner sits behind the patient, allowing the patient to rest back on his left shoulder to relax the abdominal muscles. The palmar surface of the fingers of each hand are sunk firmly and gently under each costal arch until the tips of the right are under the gall-bladder and that of the left hand well over the stomach. Pressure is made alternately on one side, then the other, first under condition of diaphragm rest, then under inspiration. Using the left side as a control, a tenderness in the gall-bladder region is most suggestive. These two latter signs have helped my students and myself so many times I cannot speak too enthusiastically about them.

Lastly must be remembered that when gall-stones are old and enough calcium is

contained in them, they may be seen by the X-ray. Or, if adhesions to the stomach and duodenum exist, the characteristic hugging and anchoring of the stomach to the liver can be noted. Perhaps the adhesions extend downward, being attached to a portion of the small or even the large intestine, and this can be noted. Lay people have an idea that the X-rays should show the stones if present. While this is true in a number, many of such diagnoses by X-ray must be made in the indirect manner. This, of course, enters items of uncertainty, which, when distinct adhesions exist, is relatively small by some X-ray men. The truth is that the stones may be wholly of cholesterin or biliverdin and thus throw no distinct shadow, or that no or very insignificant adhesions exist. In such instances and in cholecystitis in general (unless the gall-bladder is very large or containing a very thick bile, and the technique very accurate), there is no distinct value to this means of examination.

The treatment of cholecystitis is now well established. The acute catarrhal forms whether accompanied by stones or not, usually yield to medical treatment. Hot or cold applications are suitable, or a mustard plaster until the skin is red, followed by an ice bag, has a preference with me. The so-called "sweat bandage" answers to good purpose if the pain is moderate or there is only distress. Internally I use urotropin with or without sodium salicylate. Free drinking of water should be encouraged, and with the rest in bed, a plain milk or fermented milk diet answers for the first few days. If there is distinct biliary colic a small dose of morphine with atropine may be called for, these, of course, given hypodermically. After the subsidence of the acute symptoms, a few days of remain-

ing in the house, and freedom from fatiguing labor or exercise, cold drinks and solid foods, suffice to cover the case. At this time Riesman recommends the giving of a capsule, each containing 0.17 ($2\frac{1}{2}$ grains) of sodium salicylate, sodium succinate and ox gall after meals. I have tried this combination, sometimes in larger doses, and have found it satisfactory. A laxative saline like sodium phosphate or Carlsbad in hot water may be advisable.

In the chronic cases more may be said, since those in which operation is not definitely indicated when first seen, or could be performed with safety, or is not allowed, may be treated. I have found of value a diet which does not contain much sugar or starch, and these given in finely subdivided forms, only lean meats, the meals frequent, say at 7.30, 10, 1, 4, 6 and 9 o'clock, the use of Vichy Celestin at the main meals, and about eight glasses of cold water a day. The drinking should be engaged in after meals. The following is an ideal plan of diet for the average case.

Care should be taken not to eat too much of sugars and starches. Alkaline waters and spring waters should be used in good quantity between the meals. Carlsbad salts and sodium phosphate are the best laxatives to advise. The meals should be frequent and the sugars and starches taken in the form of purees, or finely divided.

The following gives a list of articles of food that may be used in the management of cholecystitis:—

BREAKFAST, 7.30 A. M.

Fruit—grape fruit, apples, baked or stewed, pears and evaporated apricots stewed; grapes, berries in season, excepting strawberries, without sugar. Fish—scrod, haddock, halibut, finnan haddie,

cod, smelts, perch, trout, pickerel. Lamb or veal chops. Baked potato with a moderate amount of butter. One slice of dry toast with a little butter. Broiled chicken or honeycomb tripe. A cup of coffee without cream or sugar.

10.00 a. m.—Bread with a little marmalade, jam or bees' honey.

DINNER, 1.00 P. M.

Raw oysters; clam or beef bouillon; fish as above; beef, lamb, veal, chicken, turkey. Vegetables—spinach, Irish potato, green peas, young string beans, water cress. Dessert—crackers and cheese (Camembert, cottage). Fruit cooked without sugar; cup of tea or a glass of water.

4.00 p. m.—One glass of milk with some crackers or a slice of toast.

SUPPER, 6.00 P. M.

Broiled fish as for breakfast. Meat stews—lamb, chicken. Chops. A baked potato with a moderate amount of butter; stale bread or dry toast with a little butter. A cup of tea without sugar or a glass of milk. Cooked fruit.

9.00 p. m.—A glass of milk.

SUGGESTIONS.

Drink one glass of Celestin Vichy or water one hour before breakfast and at 12.00 m. Eat only the lean meats. Do not drink anything until the end of the meal. Take about eight glasses of liquids in all during the day.

It is important that Carlsbad be used, the Sprudel in the morning and perhaps the Thermal water during the day. Carlsbad answers to better purpose in these cases than sodium phosphate or other salines. Patients must be made to exercise, preferably in the open, and always short of fatigue. Attention to the clothing and

proper bathing helps along. The best prescription I have used of the many tried is the gall-bladder pills employed by me and going by my name in a number of hospitals. They should be taken for some weeks with perhaps no saline purges at that time. The prescription and directions are the following:

R Acidum soda oleat

Sodium salicylicaa 4.3

Phenolphthalein1.0

Mentholis35

Fiat. Pil. No. 50.

Sig.: Take two before breakfast and before retiring followed by a glass of hot water.

Such treatment merely brings about a *statu quo* in the biliary tract by relieving the inflammation in the gall-bladder. No dissolving of gall-stones takes place, or could with any form of treatment, but many of these cases respond to remain essentially symptom-free for months of time. I have seen some for several years. It is interesting too in those who do respond and those who have a return of symptoms, that the latter are easier controlled than the first. When the symptoms are frank enough or do not respond to medical treatment, or return quickly, operation is indicated. It is likewise indicated in empyema of the gall-bladder, diabetes and cancer, and, of course, when phlegmonous or gangrenous cholecystitis is suspected. In the chronic cases it is important to remember that long-standing trouble can cause constant dyspepsia, rendering the individual quite miserable, and then there are the possibilities of chronic pancreatitis, acute pancreatitis with fat necrosis, acute empyema of the gall-bladder, diabetes and cancer. In such cases as these it is wise for one to weigh the factors early, for a long course

of medical treatment, or annual sojourns to spas is not as safe as surgery. One may advise conservatively in individual instances, but from many of those I have seen, and the low mortality on hand, surgery is by far better for the patient and fairer to our knowledge of the subject. I believe with Mayo and Deaver that if more cases of those who do not respond early and definitely to medical treatment were operated upon, the reaping of the unfortunate sequelae of cholecystitis would not be as marked as it is today.

21 West 74th Street.

DIATHERMIA AS A THERAPEUTIC AGENT IN TUBERCULOSIS.¹

BY

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Tuberculosis in all of its aspects has been presented for consideration in recent years perhaps more often than any other ailment that has beset humanity. The reason for this extraordinary volume of discussion is not far to seek. It is made patent in the statistics of tuberculosis, which in our time and generation has become an epidemic evil. If its unsuccessful

¹Read at the N. Y. Physical Therapeutic Association, Jan. 6, 1915.

Time does not permit of a detailed account of the behaviour of patients under treatment. I would refer those interested to "The Chiroprician," Flower Hospital, N. Y. City, issue of December, 1913, or the "Medical Times," N. Y. City, issue of September, 1914.

assaults are added to the successful ones, its inroads may without exaggeration be said to comprise almost the entire human race. Tuberculosis, like the poor, we have always with us.

The tuberculin test has shown that over ninety per cent. of children are infected before their twelfth year; nearly one hundred per cent. of all the bodies that have come to autopsy show unmistakable signs of a previously existing tuberculous lesion; one-seventh of the entire human race die annually of this disease.

Under the circumstances, I need offer no apology for reintroducing a subject of perennial interest to every physician. On the contrary, it is not only the privilege, but the special duty of us all to investigate the merits claimed for a therapeutic agent with a record of clinical application.

Let me first state in all brevity, the admitted commonplaces from which this inquiry is to take its start.

The primary goal of all therapeutics is the removal of the cause; or, if that be impossible, then to make the cause inoperative by so calling the forces of nature to our body defence as to ultimately overcome the effects of the cause.

This leads us to the consideration of the two questions: "What is the cause of tuberculosis and what are our body defences that overcome the cause?" All authorities agree upon two pre-requisites; the *bacillus tuberculosis* and a suitable medium for its development and future propagation.

The symptoms which the patient manifests are the results either of a toxin elaborated by the bacillus or the disintegration of the bacilli themselves, so that we are confronted with the following etiological situation; the presence of the *bacillus tu-*

berculosis, a suitable medium, the formation by the bacillus of a toxic element, the absorption of this toxic element by the host.

Should any one of the enumerated conditions be lacking we could not have symptomatic manifestations of tuberculosis.

That Nature constantly interferes with these pre-requisite conditions, is shown by the statistics of the ailment under discussion. As stated before, about ninety per cent. of children, before the age of twelve, are infected with the bacillus. Do they die of the disease? Certainly not. Do they show its manifestations during the rest of their lives? Again most emphatically not, as only one-seventh of the entire human race die of the disease. Something has removed one of the necessary links in the chain, something has arrested the progress. Persons well advanced in years die of accidents or intercurrent diseases other than the White Plague; their bodies come to the autopsy table and over ninety per cent. will show undoubted signs of having had at some time during their existence all the elements necessary for a development of tuberculosis.

The progress however was arrested, the lesions healed and tuberculosis was perhaps never suspected and certainly not treated for, yet *something* did heal those lesions.

That *something*, whatever it is, wherever it came from, is inherent in each system, it is not produced by artifice; it is natural, it is physiologic.

That *something* we must find, that same *something* that is now curing patients unconscious of their ailments, that always has cured them, we must discover if ever we hope to cut down the ravages of this dread disease.

There are two main channels for infec-

tion, the one through the inspired air, the other through the gastro-intestinal tract. Environment and heredity are predisposing causes.

We have tuberculosis taking place as a result of these conditions in or around the immediate neighborhood of joints (spine, hip, knee, elbow and finger) the glandular system (cervical, bronchial and mesenteric) the skin or the apices of the lungs.

All of these enumerated tissues, though differing widely in their anatomic structure and physiologic function, have one thing in common, namely physiologic anemia.

Because the *bacillus tuberculosis* seems to select these regions it would appear as if these bacilli possessed a predilection for blood poor areas. Not only that, but because the toxins do not call forth a positive chemotaxis, whenever this toxic material becomes associated with the tissues, anemia is the inevitable result and a further spread of the bacilli made possible.

Contrary to general expectations, we have in the lungs anemic areas. They are endemically found in individuals wherever our over-gregarious ways of living herd masses of human beings together within cramped spaces. In the confined and polluted air of school rooms, factories, shops, all night restaurants, people unlearn the habit of deep breathing by the way of unconscious reaction against the vitiated air.

Non-use of their lungs soon leads to anatomical and functional atrophy with the consequent anemia. The relatively imperfect mobility of the apex, its insufficient aeration and lessened blood supply render it a very favorable soil for the growth of the bacilli.

"Under ordinary circumstances, the disease begins in the apical portion of the

lungs, not quite at the apex, but usually at a point about one and a half inches below the extreme apex."—Osler.

The explanation of this local start is found in the fact that at this point the functional anemia begins and marks the line of demarcation between suitable and unsuitable soil for the bacillus.

Stone cutters, miners, foundrymen, tailors, clerks and men in similar occupations furnish a high mortality percentage in tuberculosis. In many of these occupational cases we find upon autopsy, evidence of dust and dirt deposited in the middle and lower portion of the lung. But the initial focus of the tuberculous lesion is found not among the dust and dirt but in the upper or unused area—the anemic area. This forces upon us the conviction that anemia is an essential factor in the White Plague. Our conviction regarding anemia as a pathological basis of tuberculosis is furthermore strengthened by the fact that wherever there is an abundant blood supply this ailment is notably absent. As for instance in such cardiac lesions as will lead to pulmonary congestion, tuberculosis seldom, if ever, occurs.

Asthma is frequently associated with lung congestion and seldom, if ever, is tuberculosis found in an asthmatic patient.

As it is the intention of this paper to deal only with tuberculosis of the lungs, especially in the early stages, I shall omit matters not bearing upon my subject within these self-imposed limitations.

Clinical Diagnosis.—The diagnosis of tuberculosis resembles that of cancer in the following particulars; the moment that we succeed in establishing a positive diagnosis of either it is nearly too late for therapeutic benefit. The early symptoms of tuberculosis are subjective and objective.

The subjective symptoms cause the patient to consult the doctor for nearly everything except tuberculosis.

Subjective Symptoms.—1st. *General malaise and fatigue.* The patient tires easily, his appetite is capricious, nothing seems to taste just right, he becomes irritable and moody, he thinks a tonic or a stomachic might help.

2nd. *Cough.* Upon awakening in the morning there seems to be an unusual amount of mucus present, and he is obliged to clear his throat. The patient always remembers having been exposed to a draft of fresh air and so "caught cold." He thinks he needs a cough remedy.

3rd. *Loss of weight.* For some reason the patient does not seem to fill out, he remains lean and lanky; he is usually ten or more pounds under weight.

Objective Symptoms.—1st. *Rapid pulse.* As soon as the system absorbs the toxic products of the tubercle bacillus, there ensues a reaction on the part of the system to overcome this toxemia. The result is a quickened pulse rate. A daily pulse of eighty or more becomes suspicious.

2nd. *Increased temperature.* It is far better to be guided by the daily variation between the minimum and the maximum than by the temperature per se.

The normal temperature differs with each individual, but if the daily variation exceeds one and six-tenths degrees it should arouse our suspicions. The daily variation in a tuberculous subject amounts to from two to three and a half degrees.

3rd. *Progressive loss of weight.* A patient with incipient tuberculosis systematically loses weight. This loss of weight is disproportioned to the food intake or manner of labor performed. Such a patient fails to assimilate fat, he is actually eliminating it.

4th. *Litten's phenomenon.* With even a slight tuberculous lesion of the lung the diaphragm on the effected side does not make its full excursion during inspiration and expiration. In a good light a shadow or wave like motion can plainly be seen to lag behind its fellow of the opposite side.

5th. *Supraclavicular retraction.* As

soon as there is the formation of tubercles in the upper part of the lung, inflammatory adhesions develop. As a result of this the supraclavicular fossa on the effected side is markedly affected upon deep inspiration. On forcible expiration it does not fill out as well as its fellow on the opposite side.

These are some of the early important clinical signs of pulmonary tuberculosis. Whenever a majority of these are present the case should be considered in the pre-tuberculous stage.

If the patient shows a minority of these symptoms, then laboratory aid must be sought.

Laboratory Diagnosis.—1st. *Tuberculin reaction.* Whether this consists of the cutaneous, the subcutaneous or the conjunctival is immaterial. Reaction means that there is or recently has been a tuberculous process somewhere in the patient. If the process is latent and the local lesion cannot be determined, such a patient may be considered tuberculous but he should not undertake therapeutics. Hygiene and prophylaxis are his safeguard.

2nd. *Examination of the sputum.* Tubercle bacilli never appear in the sputum unless softening in the focus has taken place. It is of course *prima facie* evidence of tuberculosis. If the greater majority of clinical symptoms are absent or even of only moderate severity, the patient may still be considered an early case. If the majority of clinical symptoms are present, the family history good, the environment suitable, his general physical condition still at par, he may be classed as in the early second stage.

When all of the afore mentioned clinical manifestations and the laboratory signs are in evidence the patient is in the late second stage. It matters little as to time, whether they have been present for one month or several years. Some patients never get to the first stage, others live for years in the second stage, while some die in the third stage a few weeks after the onset.

Treatment.—The treatment must be based upon the following considerations:

1st. *The removal of the cause.* The bacillus cannot be removed *per se*, but the anemic area can be changed to a hemic one, as the blood contains all the elements necessary for the destruction and final elimination of the bacillus; this is secondarily accomplished.

2nd. The healing or recovery from an injury cannot take place without the intervention of at least some of the phases of an inflammation; this must be produced in the affected area.

3rd. An active inflammation means a positive chemotaxis; this takes the place of the negative phase always associated with tuberculosis.

4th. The blood of each individual only is capable of furnishing the needed antibodies for his own particular system.

5th. By proper breathing the patient must prevent a future unused lung area.

Have we a means whereby these much desired requisites can be accomplished?

We certainly have. The diathermic phase of the high frequency current fulfills every requirement. The high frequency current is a rapidly alternating current. The alternations amount to one million or more per second. When the two conducting cords of a Wappler high frequency machine are attached to two tin electrodes and between these the patient is placed, these rapidly alternating currents pass in straight lines between the two electrodes.

The human body offers a certain amount of resistance to these alternations. The arrest of motion results in heat. The heat causes dilatation of blood-vessels, the blood being thus heated, performs its physiological function, which is increased oxidation, increased elimination, increased phagocytosis, the formation of antibodies and antitoxins to the particular germ or toxic material present.

In tuberculosis we are dealing as a rule with an inadequate attempt on the part of Nature to establish a recovery. In tuberculosis of the peritoneum the surgeon opens the abdomen and again closes it; nothing more is done. The amount of energy or inflammation required to heal the wound plus the minimum amount of irritation to the peritoneum from the exposure are sufficient to change an inadequate reaction to an adequate one and a cure results.

Though extraneous to my narrower subject, I have mentioned this extraordinary surgical procedure as affording a valuable hint concerning the ways of Nature in combating tuberculosis.

Let me describe to you now the electric phases of diathermia as following the same line of imitative therapeutics.

Diathermia.—Let us take the ordinary sixteen candle power lamp and pass through the carbon filament an electric current, either direct or alternating, with one hundred volts and one-half an ampere and what happens? The carbon filament undergoes little or no chemical changes, but on account of the arrested motion, the friction among the carbon atoms becomes so great, that the filament is heated to incandescence. This kind of a current of fifty watts sent through the human body would cause more or less serious injury to the tissues. Let us take this same lamp and attach it to a high frequency current and at once we have the same incandescence.

Now let us attach one pole to the hand of a patient while he makes contact with his free hand to the lamp and we have this same current passed through the body of the patient, illuminating the lamp as before, yet there is not the slightest sensation to the patient, in fact, he is not aware

that the current is passing through him at all.

Let us take this U-shaped tube and fill it with a solution of boiled starch to which some potassium iodide has been added. We are now passing a few milliamperes of an ordinary galvanic current through this solution; at once there is a chemical change, the iodine set free at the positive pole forms the blue iodide of starch. This proves that electrolysis has taken place. If we attach the high frequency current to a similar mixture no change in color takes place. There is instead a gentle warming of the solution but nothing more.

Here we have an ordinary potato, we pass the high frequency current through this and find that the current has passed directly from electrode to electrode, in other words, the current has passed in straight lines. The potato was cooked in a path straight through the center while the outer portion is hardly warmed by the passage of the current.

For our next experiment we fill this U-shaped tube with the white of an egg and insert into each arm an electrode. The current is turned on and we find that the center of the tube is heated so that the egg albumen is completely coagulated, yet there is no change around the electrode. This demonstrates that it is not the electrode that becomes heated but the tissues between them. The electrodes themselves remain quite cool.

Another and much more valuable point is the fact that while the heat emanates from the periphery to the center, very soon the greatest heat seems to accumulate midway between the two electrodes. If we take a piece of beef or liver and attach an electrode at either end of the beef or liver undergoes the same heating effect as the

potato. If we place three thermometers in the path of the passing current we find that after a short time the center one shows the highest reading.

It may be said that perhaps the blood current flowing within the tissues neutralizes the heating effect. For purposes of demonstration we make use of a rabbit or guinea-pig. We attach an electrode on either flank and in the short space of three minutes and with a current of five hundred milliamperes passing, the rectal temperature will show an increase of from three to five degrees, showing that the rectal tissue was heated in spite of the circulating blood.

We will now consider the treatment of tuberculosis in the early stages through diathermia.

Patients have recovered from this disease, of that there is no doubt. How did they do it?

In the first place there was an adequate reaction and a positive chemotaxis caused the germs either to be destroyed or as is more often the case to become walled off and isolated from the general system. This could have only been accomplished through the medium of an active blood stream. The blood also furnished the necessary antibodies or antitoxins to overcome the constitutional manifestations.

What are the toxic manifestations? General malaise, variation in temperature, increased pulse rate and sweating, local or general. It is a fact that the only artificial means that has ever given any results at all is the injection of tuberculin in infinitesimal doses, one-millionth of a milligram. When this amount is injected and a reaction occurs, the patient suffers from general malaise, variation in temperature, increased pulse rate and local or general

perspiration. We also know that when a patient suffers from tuberculosis, active exercise will in a short time be followed by exactly the same reaction as though he had taken an injection of Koch's tuberculin.

By the physical exertion an increase in the pulse rate with increased temperature and sweating was caused. Some of his own tuberculin was swept into the circulation, hence this reaction. From such experiences we draw the erroneous conclusion that tuberculous patients must be kept absolutely quiet. We now realize that proper, judicious exercise can be made an important adjunct in the treatment of this disease.

In the application of diathermia we produce heat, an increase in the pulse rate, local and general sweating but seldom general malaise. As a result of localized heat production there ensues a dilatation of blood-vessels in this area, followed by the entrance into the general circulation of a limited amount of the patient's own tuberculin.

Before considering the clinical record of diathermia a few words regarding therapeutic lung exercises as an indispensable adjuvant to thermopenetration will be in place.

It has previously been pointed out that anemia of the lungs is a prerequisite to tuberculosis of the lungs. How can anemia of the lungs be prevented or overcome by exercises? That is the question and the correct answer determines the therapeutic exercise required in that particular and for that particular condition. *The answer is deep breathing.* This should at first be taught by the patient standing in front of a mirror so that he can observe the entire mechanism of respiration. This deep breathing exercise must be a graded one. The patient must be gradually taught how

to inspire, hold and again expire the air.

A second indication for exercises is the fact that after all we cannot cure the patient, the patient must learn to cure himself. The patient's blood contains all the elements necessary for a cure. The system can best furnish these when small doses of the toxic material are caused to circulate in the blood.

To accomplish this, nothing is better than a few minutes spent daily in general physical exercises where every muscle of the body is brought into activity. Whatever these exercises may consist of, like the breathing exercises, they must be prescribed in graduated doses, and above all, the physiological reaction must be our guide.

A patient with a hyper-temperature requires rest, while one of the hypo-temperature should take advantage of proper exercises. The variation of the two extremes of the temperature during the twenty-four hours is the best guide as to the amount and frequency of the exercises. The greater the variation the less the exercises, the less the daily variation the more energetic the exercises. No law or rule can be laid down in a paper of this kind, the conditions must be treated according to the laws of physiology and the attending physician is the best judge.

This question is frequently asked, "What kind of exercise do you recommend?"

The recommendation of therapeutic measure must be based upon some positive physiological reaction to be desired. It is one thing to prescribe exercises for the purpose of prophylaxis; it is quite another to prescribe for curative purposes.

In Doctor Adolphus Knopf's admirable work, "Tuberculosis, A Preventable and Curable Disease," this eminent author describes and depicts six exercises for the

prevention of this disease. I am sure that if Doctor Knopf's recommendation were to be carried out, tuberculosis among school children would be reduced fifty per cent. Doctor Knopf very wisely does not lay down any specific exercises for therapeutic purposes in this disease. Each case is a law unto itself. In a paper of this kind I can only again call your attention to the physiology involved and the particular reactions desired under certain conditions, for we must not treat the disease, but rather the conditions as they present themselves.

In the *N. Y. Medical Journal*, Aug. 22, 1914, appears the presidential address of Doctor Van Rensselaer, the Medical Director of the Albany Tuberculosis Camp entitled "*Diathermia in Phthisis Pulmonalis*." Doctor Van Rensselaer in this address reported to the Therapeutic Society of this state that with this system of treatment the recoveries or the apparently cured amounted to the amazing rate of sixty-nine per cent. The best previous methods have to their credit only fifteen per cent.

At the Albany Tuberculosis Camp this system was given a thorough trial in the following manner; all of the patients regardless of condition were divided into three groups. One-third received the usual hygienic treatment in vogue in all of the sanatoria; the recoveries were fifteen per cent. The next third were given the same treatment plus tuberculin injections; the recoveries were fifteen per cent. The last third received the usual hospital care plus the diathermic method of treatment; it was in this one-third that sixty-nine per cent. of recoveries took place.

From my own experience in institutional treatment I am convinced that in properly selected cases ninety per cent. are amen-

able to this treatment; in private practice about eighty per cent., while in public clinics the percentage drops to about fifty per cent. of recoveries.

In the Fordham University Clinic which is under my immediate supervision and in charge of my able assistant, Doctor Weldon, we expect sixty per cent. of recoveries. There is no doubt that this percentage could be materially increased if the habits of the patients could be better controlled, as well as their economic conditions while away from the Clinic.

Technique of the Application of Diathermia.—The present technique is very simple. The tin electrodes are applied front and back over the area involved. The current is gradually increased to one thousand five hundred milliamperes. After two or three weeks of this strength, if everything has progressed normally, the current is increased to two thousand milliamperes, while in another month the current is given to the point of tolerance which is about three thousand or even three thousand five hundred milliamperes; at this point it is maintained during the entire course.

At least from twenty to thirty minutes must be devoted to each treatment, while the entire period requires from six months to one year.

During the actual application of the current we observe an increase of the pulse rate four to ten beats per minute, and an increase of body temperature of from one-half to one degree F. There is at first local, later profuse general perspiration. If the dose has been too strong or the time too long continued all of these symptoms are exaggerated and followed by general malaise lasting several hours.

We have here in diathermia an agent

and a method that is capable of simulating Nature's own in the cure of this disease.

After all, what greater physician is there than the "*vis medicatrix Naturae*?"

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HENOCH'S PURPURA, WITH REPORT OF A CASE.

BY

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Henoch's purpura is a form of idiopathic purpura with pronounced gastro-intestinal symptoms—vomiting, diarrhea, and especially colic. It is frequently complicated by edema, arthritis and nephritis. It is a disease of early life. The onset varies; headache and anorexia may precede the attack of purpura, or abdominal colic may usher in the attack and the purpura may be overlooked. At times arthritis is the first symptom.

Abdominal colic may be very severe and be mistaken for appendicitis or intussusception. Fever is not high and is of short duration. Vomiting and diarrhea are common. Blood may occur in the vomited matter and in the stool. Epistaxis is common—at times bleeding from the gums appears.

Single attacks are rare—usually two or three or more attacks occur at intervals of days or weeks. Nephritis is the most serious complication. Cerebral hemorrhage, endocarditis, pericarditis, and pleuritis have complicated some cases.

The prognosis is better in children than adults. The death rate of a series of 102 cases was eight per cent.

The case I wish to report was a boy, J. B., 3½ years of age, of German parentage. Mother anemic. Father healthy. Father's brother has repeated attacks of rheumatic fever. The older brother of the

patient, a boy of 6 years, is in good health. No history of bleeding on the father's or mother's side of the family.

The boy was always healthy except for a mild attack of gastro-enteritis in his second year.

I was called July 4, 1913, to check a severe nose bleed. The mother at that time stated that the boy had complained of severe abdominal pains for about one week. She had given him castor oil, which at one time brought away a large black stool. She also volunteered the information that he is continually falling, but on questioning her she admitted that she had not seen him fall, but took for granted that black and blue marks on his body must be caused by falls.

He refused to play today, ate very little, and complained of pain in the stomach and legs, and toward evening he began to have nose bleed which refused to yield to the ordinary household remedies.

Examination shows an anemic boy of 3½ years, well developed and nourished. Blood is oozing from the nose and gums. The tonsils show no enlargement or exudate. An ecchymotic spot about 4 by 6 inches is present over the left thigh, and another spot of about the same size over the right lower abdomen. Smaller hemorrhagic spots are found scattered over the entire body except the face and hands. Lungs are normal. The heart shows the presence of a soft blowing systolic murmur over the base, transmitted upward into the vessels of the neck. The abdomen is soft but tender to pressure. Liver and spleen show no enlargement. Temperature 100 by rectum. Pulse 120.

I packed the nostrils with gauze saturated with turpentine. Gave calcium lactate, grains 10 every four hours. Rest in bed. Cereals and milk to be given cool.

July 5, 1913. Removed the packing from the nose; no further bleeding occurred. The two large ecchymotic spots have increased in size. Temperature 96.6. Pulse 100. Feels well; wants to get out of bed. I kept him on calcium lactate until July 8, then put him on sodium salicylate, 5 grains every four hours.

On July 11, seven days after the first hemorrhage, his mother allowed him out of bed. Toward evening he complained of

severe abdominal pain, and became very restless. At about 10 o'clock he began to vomit—at first a thin, greenish fluid, later on blood. Soon after this he began to bleed from his nose and mouth. When I saw him, a few hours after, he was very restless, complained of pain in the stomach, and refused to lie down because the blood trickling down his throat made him cough. Temperature 101 by rectum. Pulse 140. I packed the nares with adrenalin gauze and gave oil of turpentine minims 10 every four hours.

I saw him again in 8 hours. He had vomited a small amount of dark clotted blood, and had two large black movements. Temperature 99. Pulse 120. Tenderness over abdomen. Many fresh purpura spots have appeared. A very loud systolic murmur is present over the base of the heart. Refuses all food.

At 8:00 p. m. of this day (July 12) he again complained of abdominal pain, and again vomited a large amount of bloody fluid. There is no bleeding from his nose or gums. His mucous membranes are blanched, respiration is rapid, the pulse very small and 180 to the minute.

I injected the contents of two vials of diphtheria antitoxin, the whole equaling about 12 c.c. of horse serum.

July 13, 1913. He passed a very restless night. Temperature 102. Pulse 160. From this time on he had no more hemorrhages. The purpuric eruption did not disappear entirely until about one month after the onset of the disease. Under Fowler's solution and syrup of iodide of iron he gradually regained his color. The temperature was normal after July 14. The urine at no time contained blood, albumen, sugar or casts.

Purpura is only a symptom. It is the name applied to spontaneous hemorrhages developing in and beneath the skin and mucous membranes.

The ancients called all eruptions of a purple color purpura; this included measles and scarlet fever.

Zeller, Professor of Medicine in Tübingen, published the first clear description of purpura in 1694. Werlhof in 1775

called the disease morbus maculosus. Purpura was formerly divided into a number of different types, but it is now believed that the same pathological picture is present, differing merely in degree and localization.

The usual classification of primary purpura is as follows:

Purpura simplex; mild in its onset and progress, with hemorrhages into the skin only.

Purpura fulminans; a rapidly fatal form, usually with high fever and severe hemorrhages.

Purpura rheumatica, or as Schoenlein called it, peliosis rheumatica, a purpura with arthritic symptoms.

Purpura abdominalis, or Henoch's purpura, with severe gastric and intestinal manifestations, perhaps also joint involvement.

Purpura hemorrhagica, or Werlhof's morbus maculosus, differs from purpura simplex by the presence of hemorrhages from the mucous membranes. Some authors classify Henoch's purpura under purpura hemorrhagica.

Secondary purpura is divided into infectious purpura, which may occur in the course of any infectious disease.

Cachectic purpura, the result of chronic disturbances of nutrition, as Bright's disease, heart disease, cancer, primary anemia, tuberculosis, leukemia etc. It also occurs in old people.

Toxic purpura may occur after the administration of iodine, mercury, antipyrine, copaiba, quinine, belladonna, phenacetine, turpentine, arsenic, ergot, snake venome, etc.

Neurotic purpura occurs in a number of nervous diseases, as tabes, hemiplegia, multiple sclerosis, hysteria.

Mechanical purpura occurs after epileptic seizures, paroxysms of whooping cough, or after application of a tight bandage.

Idiopathic or primary purpura is not a common disease. At the Massachusetts Hospital 65 cases occurred among 155,000 in-patients during 33 years. At the Hamburg General Hospital there were 73 cases in 41 years in a total of 100,000 patients.

Etiology.—Osler has called purpura that obscure and interesting manifestation of which we know so much, and at the same time so little.

It occurs more frequently in the male sex, and is most common in the second decade. Season, climate and heredity have no influence.

Undoubtedly the blood-vessels are concerned, and the changes in them may be secondary to alterations in the blood.

French investigators hold that disturbance in the hepatic function is an important factor in the production of the disease. That purpura is an infection is the belief of many, however, blood cultures have been repeatedly made by recent investigators with negative results.

All studies tend to show that in purpura there is some substance in the blood that produces a dissolution of the endothelium of the blood-vessels with focal hemorrhages.

Flexner has discovered a substance in snake venom possessing the property of destroying endothelium, and to which he gave the name hemorrhagin.

Perhaps the same substance which causes changes in the endothelium also causes a pathological condition of the blood. The examination of the blood shows a secondary anemia of varying degrees. The blood platelets are diminished in number—at

times absent. The blood clot does not retract, and there is no extrusion of serum. The coagulation time, as a rule, is not diminished, but the clots are sometimes less firm than normal; this would indicate that there is no marked deficiency in thrombin or its antecedents, but that possibly fibrinogen, the mother substance of fibrin in the blood is diminished.

Many observations tend to show that there is a connection between the function of the liver and the normal coagulation of the blood. By shutting off the abdominal circulation the blood becomes non-coagulable; this may be due to a diminution of fibrinogen, either by a decreased production of it or by an increased destruction.

Osler thinks that urticaria, erythema exudativum multiforme, erythema nodosum, angioneurotic edema, and purpura all depend upon a poison which in varying doses in different constitutions, excites these different manifestations.

Differential Diagnosis.—The eruption, when petechial, may be mistaken for flea bites; such bites show a darker central point.

Telangiectatic spots occurring in a patient with abdominal colic may be mistaken for purpura at the time of the first examination.

Erythema exudativum multiforme is sometimes diagnosed as purpura, but erythema disappears on pressure while purpura does not.

Purpura with fever may be mistaken for any of the infectious diseases as all the infectious diseases at times have an hemorrhagic eruption.

Leukemia with little or no enlargement of the lymphatic nodes, and the presence of an eruption of purpuric spots, may be

mistaken for morbus maculosus. A blood count will settle the diagnosis.

Scurvy is diagnosed by the presence of spongy gums and brawny hemorrhagic infiltration of the thigh and lower leg.

Infantile scurvy occurs usually during the first year. Purpura is rarely found in infants under two years.

Hemophilia is diagnosed by the history of heredity.

Henoch's purpura has been mistaken for acute inflammatory conditions of the intestines, and exploratory laparotomies have been done. In children with colic a full history may bring out the fact of previous attacks, and a careful inspection of the body for angioneurotic edema, purpura, and erythema should be made.

Treatment.—Absolute rest in bed, even in the simplest cases, as fatal hemorrhage may occur, at any time, and if the parents have not been warned the physician will be blamed. The food must be easily digested, given cool, not hot. No stimulants. Fruit juices act well in all cases without diarrhea. Enemata for constipation; opiates for diarrhea. The list of remedies used in the treatment of purpura includes aromatic sulphuric acid, ergot, adrenalin, pituitary extract, tannic and gallic acid, stypticin, hydrastis, hamamelis, rathany, turpentine, acetate of lead, arsenic, sodium salicylate, calcium salts, and gelatine.

Sulphuric acid in strong solution acts as a styptic; given internally it does not circulate in the blood and tissues as acid, but as a salt for the reaction of the blood must remain slightly alkaline throughout life.

Tannic and gallic acid, hydrastis, hamamelis, rathany have purely a local effect in coagulating albumen.

Ergot, stypticin and pituitary extract have a constricting influence on the arteri-

oles, and where the hemorrhage is capillary may by contracting the arterioles, keep the blood out of the capillaries.

Adrenalin has a similar constricting effect but acts only when locally applied. Given hypodermically it increases blood pressure, and may increase the hemorrhage if the vessel from which the blood escapes is of any size.

Arsenic stimulates the production of red blood cells but can be of little or no use in acute hemorrhage.

Sodium salicylate is used in purpura because of the belief that purpura is a rheumatic manifestation, but purpura is hardly ever found in true rheumatic fever.

Gelatin probably acts by the presence of thromboplastin, a substance found in all animal tissues and essential to the formation of a blood clot. Because of the danger of tetanus it is not much used.

Calcium, as Hammarsten has shown, is not necessary to the formation of fibrin, for this occurs in oxalate solution if fibrin ferment be added to fibrinogen. But the fibrin ferment is not formed except in the presence of calcium salts, and when oxalates are added to the blood before the ferment is developed they prevent its formation and hinder clotting. Calcium is necessary, therefore, in the formation of the blood clot and may do good in the cases of purpura where the clotting is delayed. If calcium is used it must be administered intermittently; the continued treatment will diminish coagulability. The treatment most effective in the hemorrhagic diseases is the injection of blood or blood serum.

The mechanism of coagulation as at present understood, is as follows: Normal blood contains fibrinogen, thrombin, anti-thrombin and calcium. Coagulation can-

not take place in the blood-vessels because the antithrombin holds the thrombin in check by a loose combination. When hemorrhage occurs, thromboplastin is supplied, which neutralizes the antithrombin. The calcium then activates the thrombin, which now combines with the fibrinogen to form the clot. The thromboplastin may originate in the blood platelets, and it is produced by the tissues of the body, because extract of tissues added to blood causes marked acceleration of the coagulation time with a firmer clot than normally found.

Blood, or blood serum, must contain substances which supply the affected cells of the circulatory system, endothelial as well as general, with molecules which cause such changes in the cells as on the one hand to render the vessel wall impervious to blood, and on the other hand to stimulate the tissues to the production of thromboplastin and thus facilitate clotting in cases where the coagulation time is delayed.

How to administer the blood—whether by transfusion or the injection of defibrinated or whole blood, the injection of human or animal blood serum, is a debatable question. I believe that Welch's method of administering human blood serum, or the administration of whole blood is the best, but that the injection of horse serum, provided the serum is fresh, is certainly the simplest and quickest method if anaphylaxis and serum sickness do not interfere with its action.

Treatment for Boils.—Try 50 to 60 drops of dilute hydrochloric acid well diluted several times daily in the treatment of boils, says the *Med. Summary*. Same remedy has been recommended in pyorrhea. Rinse mouth carefully after using.

THE PRACTICE OF THE SPECIALTIES.¹

BY

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A few years ago, at the request of the Wayne County Medical Society, the Michigan State Medical Society, appointed a committee for the purpose of studying the control and qualifications of the specialists. This shows interest in a question of much importance.

The underlying idea was to ascertain whether or not the necessary attention is given by those who have the authority to grant the permission to practice what is considered a specialty, and to learn whether or not a certain standard of qualifications can be established. Directly in connection herewith the question must also be asked if there are a sufficient number of well-equipped places in which a training in the specialties can be obtained? The writer is aware of some of the many points which present themselves for discussion in a problem of this nature and how useless it would be to pay any further attention to the subject if the whole question had been solved satisfactorily.

It seems desirable to bring forward some ideas, old or new, in order to have them either confirmed, refuted or modified, so that a basis may be established for further work.

According to Webster, "specialty" is defined as follows: "That in which one specializes or has special knowledge; a branch of knowledge, art, science or busi-

¹Read before the Wayne County Medical Society March 15, 1915.

ness to which one especially devotes himself."

In certain fields of medicine the methods of diagnosis and of treatment have become more and more definite and require more equipment, time, skill and preparation. The limitation of human energy has created a division of labor in order to create greater efficiency and to avoid waste of time and effort. Even in ancient times this was often the case.

J. H. Baas (*The History of the Development of the Medical Profession and of Medical Sciences*), speaking of the Egyptians, says: "The priest-physicians were all specialists. When they were called to the patients the president of the temple chose the one fitting the case, that is, the diseased part of the body, (teeth, eyes, abdomen, etc.). There also existed veterinary specialists (for oxen, chickens, etc.), also military surgeons, paid by the state, who had at their disposal war-lazareths. It is doubtful whether there existed other physicians besides the priest-physicians."

In Rome, according to Baas, there existed many specialists besides the general practitioners, especially many specialists for the eyes, the teeth, the ears, gynecologists, hernia specialists, wine, milk and water specialists, herb-doctors, etc. The chronic cases frequently were turned over to the bathing masters and barbers. There existed also lady physicians and midwives, contract physicians for the gladiators' unions, theatres, etc.

Therefore, we may consider the practice of the specialties from the following standpoint:

- (a) Of the specialist.
- (b) Of the general practitioner and the public.

(a) H. Quincke, of Kiel, in his monograph "Medical Specialties and Medical Specialists," distinguishes between specialists by opportunity and specialists by intention. He says: "The first become specialists after having become general practitioners, because outer circumstances and opportunities presented themselves to them. If they use the general practice with determination and methodically, they may become just as good specialists as if they would have emanated from specialistic schools. The specialists by intention study their specialty immediately for a short or long time with a certain intention. They do practical work in order to confine themselves to the specialty with predilection or exclusively. The motive with some is the special interest for the special field. Others practice a specialty because they prefer the more even activity to the restless life of the general practitioner. One does it because he can make money easier, or because he is vain, as he hopes to establish a reputation more quickly; others do it out of laziness and others on account of their health." He continues, "Just like general practice the special practice is carried out in various ways according to the motives and gift. There exists a great danger that the broader medical view becomes lost. Anybody who aimed to be a specialist when he was still a student, never possessed this broad view." "I think," he says, "I can make the statement that it requires in the average, less study, diligence and talent to become a good specialist than is required to become a good general practitioner. And yet up to now the specialist is disproportionately much better paid for the same amount of toil and labor than the general practitioner."

I fully agree with Quincke. I should only like to add that another factor may

enter into consideration, which is somewhat similar to the factor mentioned by Quinke when he says that consideration of health may influence some to become specialists. I am of the opinion that a certain kind of work appeals to one on account of one's physique and temperament. As a rule, a general surgeon requires a robust physique while an eye-specialist may be more delicately built. This factor may, perhaps, have more to do with choosing a specialty than may appear at the first look. Many may be drawn into a specialty, in this manner, by following the way of least resistance.

The assertion, frequently made, that one should become a specialist only after having first been in general practice for some time is open for discussion. One can just as well demand that a general practitioner should first have been a specialist in all branches. But one can justly ask that a specialty should not be taken up during the study of medicine and that the license to practice medicine should only be given after satisfactory proof of satisfactory knowledge in all branches of medicine as is required from a general practitioner. The so-called hospital year should, of course, become obligatory for everybody before the general license to practice is issued.

If the medical school from which a physician graduated has failed to give the necessary instructions in the diagnosis and treatment of general diseases, then it is certainly necessary that the prospective specialist should first become a general practitioner. In this case, it is questionable whether his patients in his general, or those in his special practice deserve more pity.

(b) *From the Standpoint of the General Practitioner and the Public.*

There is no doubt that many general

practitioners can excel in work which is, as a rule, done by a specialist. We can understand how operations on various organs can be performed by some general practitioner in an excellent manner. In regions which are thinly populated or in the country, a general practitioner is called upon to do many things which his colleague in the city is not obliged to do. If it would be the rule that the general practitioner in the city would do the same, there would be fewer specialists, but the work can not be done so good. It is scarcely possible for a busy practitioner who may also have to do, e. g., obstetrical work during the night, to perform delicate operations the following day, day after day. Another point which should be considered in the interest of the public is, that the experience and skill of a specialist depends, to a considerable degree, upon the number of well observed and well treated patients. This applies especially to the more unusual cases in which a differential diagnosis is difficult, or in which especially delicate operations are indicated, e. g. in neurology, brain surgery, genito-urinary surgery, etc. If many physicians operate on such patients or have them under their medical care, the many will not acquire the experience, or perfect their skill, because they do not see and treat a sufficiently large number of patients thus afflicted. The old saying, "*repetitio est mater studiorum*," can surely be applied here. If the number of the physicians specializing in a given branch is limited, they will gain more experience and perfect their skill more. The patients will profit by it. The three medical demands will thus be served best, namely, (1) to cure the sick and alleviate suffering; (2) to teach; (3) to investigate and add to medical knowledge.

It is true that people demand expert work; it is equally true that a specialist can furnish expert work to a greater degree than a general practitioner, but this expert work is limited to a smaller area of the field of medicine. Generally speaking, the general practitioner excels in broadness while the specialist excels in depth and in the skillful application of methods.

The time of the general practitioner or family physician not only has not passed, but his time is yet to come, especially in view of the advances made in preventive medicine. We have seen the effort to establish numerous health offices in the state, a most commendable endeavor. Such a step does not go far enough. In the light of our present knowledge and experience a more perfect solution will be reached when every family and every individual will be obliged to have a family physician who must be consulted in case of sickness, whether the patient is able to pay for his services or not. In the latter instance, the community must take a hand. This is absolutely essential from the standpoint of preventive medicine, e. g., in infectious diseases. (*Analogy: The Elberfeld system of taking care of the poor*).

The number of exceptional cases the specialist has to treat is counterbalanced by the number of routine cases. Even the additional equipment and the special education which the specialist must obtain after acquiring his general medical education does not alter this standpoint. The more or less important additions to medical knowledge by the specialist is something which is expected of him, be it in the form of investigations or exemplary work. It also must be acknowledged that, e. g., the ability to remove an appendix does not stamp the operator a surgeon, neither

the instillation of eye-drops or the fitting of glasses, the eye-specialist, nor the spraying of noses, the nose and throat specialist, etc. A colleague of mine, in a German town told me that the local medical society recognizes as a specialist only the physician who is able to perform all the operations required in his specialty. I think this furnishes the key to the situation. If a specialist is obliged to be able to perform all the operations in his line of work, it is, of course, necessary that he must have learned to carry out these operations satisfactorily. It is evident that it is impossible to become efficient in making a differential diagnosis and to learn to operate and how to conduct the after-treatment only by reading books or short post-graduate courses. It is not correct to think that a specialist can create himself out of a general practice, i. e., that he can be an autodidact. Such a condition is justified, I admit, under certain rare circumstances, namely, when a specialty is new. It is clear that it is not necessary for one to feel his way and experiment, so to speak, on his patients, when such an experiment is not necessary especially when the literature, and the experience of others should teach him what course to pursue. If the public forces a physician to proceed in that manner, the public should understand that it pays for it with its health. This means that the specialist must have a practical and methodical additional training in a place where he sees many cases. This can be done only in special hospitals or in special departments of general hospitals. In my opinion, special departments in general hospitals are by far preferable to special hospitals, because the ability to make differential diagnosis, which is so very important, is much easier and more thoroughly acquired in those places,

and the contact with general medicine is preserved. The demand that a prospective specialist must acquire knowledge and manual training in a special department is not only practical and feasible but imperative. Such places must be created in sufficient numbers. A certain number of well known special hospitals have educated a number of specialists through their internships and staff appointments, but, excellent as their system is, their number is by far too small. A new departure has recently been made by the University of Minnesota.

Thus the School of Medicine of this great State University has established teaching fellowships in the clinical departments, with the end in view of providing well-trained, full-time assistants and research workers and at the same time giving a basis for graduate instruction in the various specialties.

The course of study will be elastic and arranged to suit the needs of particular students. In general, it will include, (a) thorough clinical training in the major subjects, (b) less clinical training in allied branches, (c) advanced work in laboratory science such as anatomy, pathology, and experimental medicine, (d) library and seminary work to give acquaintance with the literature, (e) research. The regular time requirement for the advanced degree will be three years. Credit will be given for advanced work done in acceptable institutions, but at least one year must be spent in the University of Minnesota, for either a degree or a certificate of proficiency. In all cases, the time requirement is of less importance than the character of the work accomplished. Attendance alone will not entitle a student to claim either a certificate or a degree.

On January 30th, the Dean of the Med-

ical Faculty, in response to an inquiry from me, wrote me as follows:

"Our Graduate School is in operation. We have six Fellows this year and hope to have the number doubled next year. The Regents have also allowed us five scholarships which give free tuition, part of which are filled at the present time. The question of an affiliation with the Mayo Clinic at Rochester is under discussion. If this proposition is approved we shall give our graduate work at that institution as well as in Minneapolis."

I think that the University of Minnesota deserves great credit for its pioneer work.

The *Journal of the American Medical Association* of March 6, 1915, contains valuable contributions bearing on the subject of this paper.

Quincke thinks that a special examination is only possible for specialties which are well defined and entirely acknowledged. He says: "Nothing can be done but to allow the subjective labeling as a specialist. The halo adorning the "specialist" will then disappear and the public itself will have to decide whether the flag is bona-fide or only serves for advertising, just as it is left to the public to discriminate between a good and a less good physician. It even would perhaps be well to tell the public officially that the state does not guarantee the announcement of a specialist."

Contrary to Quincke, I am of the opinion that it is not possible for the public to decide whether somebody is a bona-fide specialist or not. As in general practice, frequently, the popularity of a physician stands in inverse proportion to his medical ability and knowledge. There is a great difference between a busy practitioner, with his proper assistants, who facilitate and supplement his work, and the over-

worked practitioner who tries his best, but must fail, to the detriment of his patients and his own health. Such a state of conditions often exists, not alone on account of the vicious circle in which a very popular physician may find himself, much against his will, but on account of the utter lack of attention on the part of the State concerning changed conditions. It is obviously the duty of the State, through the proper authorities, to control the situation as far as it can.

CONCLUSIONS.

1. A special training of specialists is imperative.
2. Such special training must be acquired practically.
3. This practical training must be obtained in a proper hospital department.
4. Proper hospital departments must be created in sufficient numbers.
5. Hereby the number of real specialists will be made more proportionate to necessity, and the semi-specialist will disappear.
6. The estimate of the value of the service of a specialist and the service of a general practitioner must be readjusted.
7. The state must guarantee, in some form or another, the announcement of a specialist.

Heavy doses of arsenic are of value in purpura.

Sciatica.—For sciatica, adult, take one drop of the tincture of apocynum, in a little water, every half hour, until pain abates, then every hour or two until the disease is vanquished. According to the *Medical Summary* this is exceedingly effective.

SOME REMARKS ON THE MORE COMMON INSECT CARRIERS.

BY

DAY ALLEN WILLEY.
Baltimore, Md.

Dr. E. O. Hovey, Chief of the Bureau of Entomology, has been studying for many years the relation of insects to such diseases as yellow fever, bubonic plague, malaria, typhoid fever and tuberculosis. The writer has recently had occasion to become familiar with this interesting work and has been surprised to learn how important a role certain insects play in the dissemination of various diseases. Thus Dr. Hovey has recently said:

"It has been definitely proven that malaria in its different forms, is disseminated among the individuals of the human species by the mosquitoes of the genus *Anopheles*, and the malarial organism gains entrance to the human system, so far as known, only by the bite of mosquitoes of this type. It has been proven with equal definiteness and has also become generally known that yellow fever is disseminated by the bite of a mosquito known as *stegomyia calopus*. The common house fly is an active agent, in the dissemination of typhoid fever, Asiatic cholera, and other intestinal diseases, by carrying the causative organisms of these diseases, from the excreta of patients, to the food supply of healthy individuals. Certain species of fleas, are the active agents, in the conveyance of bubonic plague and typhus.

"Moreover, the tropical disease known as filariasis, is transmitted by a species of mosquito, while the so-called "spotted fever" of the northern Rocky Mountain region is carried by a species of tick; it has also been demonstrated that certain

blood diseases may be carried by several species of biting insects.

"In many large regions once malarious the disease has lessened greatly in frequency and virulence owing to the reclamation of swamp areas and the lessening of the number of the possible breeding places of the malarial mosquitoes, but the disease is still enormously prevalent, particularly so in the southern states.

"There are many communities and many regions in the North where malaria is unknown, but in many of these localities

or, as occurred at a fashionable summer resort near New York City, by the appearance of a coachman who had had malaria elsewhere and relapsed at this place. In such ways, with a rapidly increasing population, malaria is still spreading in this country.

"With the average annual death rate due to malaria 4.8 per 100,000 population, and considering that the registration area includes only 16 of the Northern states, it seems safe to conclude that the death rate from malaria for the whole United States

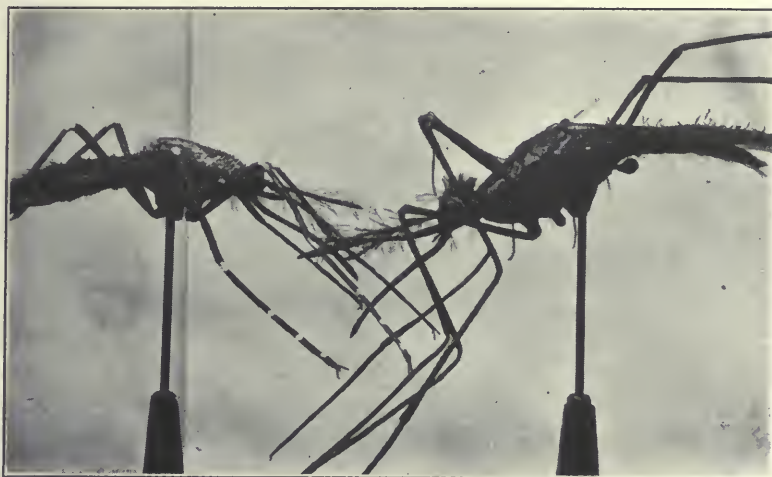


Fig. 1.—Models of the *Anopheles* enlarged to show characteristics.

and throughout many of these regions *Anopheles* mosquitoes breed, and the absence of malaria means simply that malarial patients have not entered these regions at the particular time of the year necessary to produce a spread of the malady.

"It has happened again and again, that in communities where malaria was previously unknown, it has suddenly made its appearance and spread in a startling manner. These cases are to be explained, for example in Brookline, Mass., by the introduction of Italian laborers, some of whom were malarious, to work upon the reservoir ;

must surely amount to 15 per 100,000. It is probably greater than this, since the statistics from the South are city statistics, and malaria is really a country disease.

"Thus it is undoubtedly safe to assume that the death rate for the whole population of the United States is in the neighborhood of 15 per 100,000. This would give an annual death rate from malaria of nearly 12,000 and a total number of deaths for the eight-year period 1900-1907, of approximately 96,000.

"Malaria is a preventable disease. It is possible for the human species, to live and to

thrive and to produce in malarious regions, but at a very considerable inconvenience and expense. The Italian investigators, and especially Celli and his staff, have shown that by screening the huts of the peasants on the Roman Campagna, and by furnishing field laborers with veils and gloves when exposed to the night air, it is possible even in that famous hotbed of malaria, to conduct farming operations with a minimum of trouble from the disease.

the pernicious coast fever may be greatly reduced.

"The most thorough and the most satisfactory of all measures, consists in abolishing the breeding places of the malarial mosquitoes. In regions like the Delta of the Mississippi this involves extensive and systematic drainage, but in very many localities, where the breeding places of the *Anopheles* mosquitoes can be easily eradicated, in that they are readily located and so circumscribed as to admit of easy treat-



Fig. 2.—Another model of the *Anopheles* mosquito made and posed by Mrs. Heidemann.

"Koch and his assistants in German East Africa have shown that it is also possible, by stamping out the disease among human beings by the free use of medicine, to reach a point where there is small opportunity for the malarial mosquitoes to become infected.

"The work of the parties sent out by the Liverpool School of Tropical Medicine and other English organizations to the west coast of Africa has shown that by the treatment of malarial-mosquito breeding pools

ment, it is possible to rid the section of malaria at a comparatively slight expense.

"In 1900, an Army Board was appointed by Surgeon-General Sternberg, for the purpose of investigating the acute infectious diseases, prevailing in the island of Cuba. The result achieved by this Board, consisting of Reed, Carroll, Lazear, and Agramonte, was a demonstration that yellow fever is carried by *stegomyia calopus*, and their ultimate demonstration was so perfect as to silence practically all expert oppo-

sition. The first demonstration was followed by anti-mosquito measures in the city of Havana, undertaken under the direction of Gorgas, with startling results. By ordinary sanitary measures of cleanliness, improved drainage, and similar means the death rate of the city was reduced, from 1898 to 1900, from 100 per thousand to 22 per thousand.

"It was found that the *stegomyia* bred principally in the rain-water collections in the city itself. The city was divided into about 30 districts, and to each district an

law were emptied, and on the second offence, destroyed. The result of this work thus thoroughly done, was to wipe out yellow fever in Havana, and there has not been even an endemic case since that time. The disease began almost immediately to abate, and the result at the close of the season indicated 460 deaths, as against 4,046 in 1878, a virtual saving of over 3,500 lives.

"The United States further engaged the services of Colonel Gorgas, who was in charge of the eminently successful work at Havana, by appointing him Chief Sanitary



Fig. 3.—The type of mosquito which causes the disease known as filariasis. Model made by Mrs. Heidemann.

inspector and two laborers were assigned, each district containing about a thousand houses. An order was issued by the Mayor of Havana requiring all collections of water to be so covered, that mosquitoes could not have access, a fine being imposed in cases where the order was not obeyed.

"The Health Department covered the rain-water barrels of poor families at public expense. All cesspools were treated with petroleum. All receptacles containing fresh water which did not comply with the

Officer of the Canal Zone during the digging of the canal. Colonel Gorgas was fortunate in having the services of Mr. Le Prince, who had been chief of his mosquito brigades in Havana, and therefore was perfectly familiar with anti-mosquito methods.

"In Panama, as in Havana, the population had depended principally upon rain-water for domestic purposes, so that every house had cisterns, water barrels, and such receptacles for catching and storing rain-water.

"The city was also divided up into small



Fig. 4.—Common house fly (*Musca Domestica*) enlarged and viewed from above.

districts with an inspector in charge of each district. This inspector was required to cover his territory at least twice a week and to make a report upon each building with regard to its condition as breeding places of mosquitoes. All the cisterns, water barrels, and other water receptacles in Panama were covered as in Havana, and in the water barrels spigots were inserted so that the covers would not have to be taken off.

low fever and the very great reduction of malarial fever.

"It was found during the first two years under Doctor Gorgas, that, although there were constantly one or more yellow fever cases in the hospital, and although the nurses and physicians were all non-immunes, not a single case of yellow fever was contracted in that way. The nurses never seemed to consider that they were running any risk in attending yellow fever



Fig. 5.—A model of the house fly, a factor in the causation of typhoid fever.

"These operations were directed primarily against the yellow fever mosquito, and incidentally against the other common species that inhabit rain-water barrels. The same operations were carried on in the villages between Panama and Colon. There are some twenty of these villages, running from 500 to 3,000 inhabitants each. Not a single instance of failure has occurred in the disinfection of these small towns, and the result of the whole work has been the apparent elimination of yel-

cases, night and day in screened wards, and the wives and families of officers, connected with the hospital fearlessly lived about the grounds, knowing that yellow fever was constantly being brought into the grounds and treated in nearby buildings.

"Americans, sick from other causes, had no fear when placed in beds immediately adjoining those of yellow fever patients.

"Colonel Gorgas and Doctor Carter lived in the old ward used by the French for their officers, and Colonel Gorgas is quoted

as saying that more men had died from yellow fever in that building under the French régime than in any other building of the same capacity at present standing. He and Doctor Carter had their wives and children with them, which would formerly have been considered the height of recklessness, but they looked upon themselves, under the

"Flies swarmed over infected fecal matter in the pits and then visited and fed upon the food prepared for the soldiers at the mess tents. This was the condition in every regiment in the United States service in 1898 that developed typhoid fever, nearly all of them within eight weeks after assembling in camps. It not only appeared in



Fig. 6.—Another model of the house fly (*Musca Domestica Linnaeus*) prepared by I. Matausch.

now recognized precautions, as being as safe, almost, as they would have been in Philadelphia or Boston.

"The prevalence of typhoid fever in the concentration camps of the United States Army in the summer of 1898 brought about the appointment of an army board of medical officers to investigate the causes.

every regiment in the service, but it became epidemic both in small encampments of not more than one regiment and in the larger ones consisting of one or more corps. All encampments located in the Northern as well as in the Southern States exhibited typhoid fever in epidemic form.

"In 1899 began the study of the typhoid

or house fly under both country and city conditions. A rather thorough investigation of the insects found in human excrement was made, and a further investigation of the species of insects that are attracted to food supplies in houses. This fly, while breeding most numerous in horse stables, is also attracted to human excrement and will breed in this substance. In towns where the box privy was still in existence the house fly is attracted to the excrement, and, further, that it is so attracted in the filthy regions of a city where sanitary supervision is lax and where in low alleys and corners and in vacant lots excrement is deposited by dirty people.

"As a result of these investigations, it is evident that box privies should be abolished in every community. The depositing of excrement in the open within town or city limits should be considered a punishable misdemeanor in communities which have not already taken this position and it should be enforced more rigorously in towns in which it is already a rule.

"Such offenses are generally committed after dark, and it is often difficult, or even impossible to trace the offender; therefore, the regulation should be carried even further and require the first responsible person who notices the deposit to immediately inform the police, so that it may be removed or covered up. Boards of health, in all communities, should look after the proper treatment or disposal of horse manure, primarily in order to reduce the number of house flies to a minimum, and all regulations regarding the disposal of garbage and foul matter, should be made more stringent and should be more stringently enforced.

"The numbers of bacteria on a single fly may range all the way from 550 to 6,600,000. Early in the fly season the

numbers of bacteria on flies are comparatively small, while later the numbers are comparatively very large. The place where flies live also determines largely the numbers that they carry. The average for 414 flies was about one and one-fourth million bacteria on each. It hardly seems possible, for so small a bit of life to carry so large a number of organisms.

"The method of experiment of determining the number is to catch the flies from several sources by means of a sterile fly



Fig. 7.—Eggs of the common fly deposited in manure or garbage heaps. Much enlarged.

net, put them into a sterile bottle, and pour into the bottle a known quantity of sterilized water, then shake the bottle to wash the bacteria from their bodies, to simulate the number of organisms that would come from a fly in falling into a glass of milk. The bacteria were analyzed into four groups. The dangerous class, was two and one-half times as abundant as the harmless type.

"If these flies stayed in the pigpen vicinity, there would be less objection to the flies and the kinds of organisms they carry, but the fly is a migratory insect and it visits everything 'under the sun.' It is al-



Fig. 8.—The body louse (*Pediculus corporis*) the carrier of the typhus germ.

most impossible to keep it out of our kitchens, dining-rooms, cow stables, and milk-rooms.

"The only remedy for this rather serious condition of things is then, to remove the pigpen as far as possible from the dairy



Fig. 9.—The common bed bug (*Cimex lectularis*).

and dwelling house. Extreme care should be taken in keeping flies out of the cow stable, milk rooms, and dwellings. Flies walking over our food are the cause of one of the worst contaminations that could occur from the standpoint of cleanliness and the danger of distributing disease germs."

THE ANNOTATOR

Hygienic Care of the Feet.—It used to be taught that a soldier was as good as his stomach, for if he could eat and digest his



rations it was pretty certain he could fight when occasion demanded. In more recent years this idea has been superseded by the opinion that a soldier's efficiency as a fighting unit depends mainly on the condition of his feet. The correctness of this conclusion was so clearly demonstrated in our great Civil War, that hardly any one detail was given closer attention in examining volunteers at the outbreak of the Spanish War, than the state of their pedal extremities. The slightest abnormality liable to increase the tendency to chafing or the growth of corns or callosities led to summary rejection of the applicant. Much grumbling was heard and the army surgeons were condemned vigorously for their seemingly arbitrary rulings. But they were absolutely right, and foot deformity or weakness of the simplest character is certain to lower a soldier's usefulness, and in many instances render him totally unfit. A soldier with sore, blistered feet is seriously incapacitated; his pain harasses him constantly and even with a very slight blister, bruise, or abrasion, he feels sick and discouraged. Try as he will, he cannot throw off the depression that seizes him. In such a state, a soldier is lacking in aggressiveness, stamina, and almost everything else that makes him an efficient fighter. Foot troubles have been much in evidence in the present great European War, and the soldiers of each country have employed many measures to relieve foot soreness and keep the feet from becoming tender and raw. Thus a favorite procedure with many has been the saturation of the stockings with castor oil, or when this was not available, any other heavy bland oil. Others have used soap, shaving it up thinly and dropping these shavings into the shoes each morning be-

fore putting them on. Many have preferred to moisten the soap slightly and by rubbing the cake on to the stockings, produce a coating, which has not only afforded marked relief from soreness but has often proved a very effective means of preventing blistering. The problem has been fully appreciated by those in authority, and as a consequence the shoes provided for soldiers have been given more careful consideration than ever before, while the men themselves have been shown the great importance of properly caring for the feet and taught how to obtain maximum relief by the use of simple measures.

In civil life the development of sore feet may not be as serious a matter as it is essentially to the soldier; but the resulting discomfort and suffering always make the afflicted one's existence most unhappy, and if allowed to continue, often lead to many reflex ills that may lower bodily resistance to a very considerable degree. The feet, therefore, should be given as painstaking care as any other part of the body, and the slightest evidence of soreness or abnormality taken as a signal for prompt and appropriate treatment.

A recent writer, Dr. W. L. Birge, in the *Trained Nurse*, points out that since two-thirds of our lifetime are spent with our shoes on, it behooves us to provide ourselves with hygienic footwear. Indeed, continues this writer, it is as foolish and unhygienic to wear tight shoes that retard the flow of blood in the feet, as it would be to sleep in a poorly ventilated room, in a bed several feet too short to accommodate the full length of the body. Can any greater discomfort, or one more calculated to destroy health and happiness be imagined than that caused by shoes that bind and cramp?

A great amount of nerve energy is required to endure the suffering caused by a pinching shoe, to say nothing of the effect the continued consciousness of the pain has on our mental processes generally. Consequently we should make it one of the important details of personal hygiene to wear shoes that fit so naturally that we are hardly conscious that we have any on. The size of the foot is rarely out of proportion to the body it is intended to carry. So we should never from a mistaken sense of pride, sacrifice physical and mental com-

fort by trying to disturb this proportion.

There are few things more beautiful than the shapely foot that has not been distorted by ill-fitting shoes. The maintenance of beauty depends, however, on the preservation of healthy conditions, and foot health calls for daily bathing, airing and massage. These, with the wearing of light, porous hose, and soft, flexible shoes that fit properly and comfortably constitute the essential details of foot hygiene.

For several years we have heard a lot about rubber heels. Some people dislike them and refuse to wear them. The great majority of those who have worn them, however, heartily commend them, and looked at without prejudice they seem to have everything in their favor and very little if anything against them. A soft, resilient heel certainly approaches more closely to natural conditions than a hard, compact one. Nature pads the heels with a cushion of fat, tissue and thick skin, and interposes cartilaginous cushions between the joints to minimize the effect of jolts. The arch of the foot and the curves and relations of the lower extremities, pelvis and spinal column are likewise designed to give springiness to the body. Nothing would seem more rational, then, than to wear heels of a material that acts in conformity with the mechanical principles of the body, and thus augments its resiliency.

It has been suggested, moreover, that wearing rubber heels strengthens the muscles of the arch and plantar surfaces, this beneficial effect being the logical result it is claimed of the exercise afforded by the elasticity of the heels and the alternate tension and relaxation incidental to each step. This opens up an interesting line of investigation that should produce much information of great practical importance. Rubber heels have undoubtedly won the regard of a great many people by reason of certain obvious advantages, but if they can be shown by incontrovertible evidence to promote foot strength and health, their place in the proper care of the feet will be established beyond all possible question.

Finally, just as Dr. Birge so aptly says, one has only to compare a foot that has been cared for hygienically with the distorted, unsightly, cramped, claw-toed object, with its ugly excrescences of corns and bunions, that is the result of wearing ill-

fitting footwear to be thoroughly convinced that the care of these very useful members is well worth while.

Rabies.—The management of a case of suspected infection from the bite of a dog or other animal known to transmit rabies should be a free opening with thorough cauterizing of the wound with fuming nitric acid, according to Ravenel in Osler's latest work. Tyson lays stress upon suction as the promptest and most available measure, if possible by the



patient himself as the procedure is not without danger to another person. Cauterization is regarded by this same writer as the next available means, using a glowing hot poker or the galvanocautery or Paquelin's cautery; silver nitrate of caustic soda may be used. Excision, if important structures are not involved, can be quickly performed. In the absence of the above methods of cauterization, pure phenol or corrosive sublimate 1 to 500 or 1 to 1000 will aid in destroying the bacillus. The wound should be kept freely open. Such a procedure may not destroy all of the bacilli, but will delay the period of incubation as well as reduce the amount of the virus to be absorbed and materially assist in the subsequent immunization. The offending animal should be secured and confined until a competent veterinarian can determine whether or not it has the disease.

Preventive antirabic inoculations are of the utmost importance. These are readily obtained at the Pasteur Institutes located in most of the large cities, or from manufacturers of biological products, as well as numerous city boards of health who furnish on demand a prophylactic treatment which has proven of very great service in hastily bringing about immunity.

The Pasteur treatment should invariably be given as less than 1 per cent. of those receiving it develop rabies, while the mortality of those developing rabies is 100 per cent. and estimates of above 20 per cent. of all persons bitten by rabid dogs die. These figures disclose the comforting fact that all persons exposed do not develop the

disease, the probability of infection depending on the location and character of the wound, the susceptibility of the individual and the amount and virulence of the virus. These factors, however, should not obviate the necessity for prophylactic as well as specific treatment, for only the location and character of the wounds can be determined at the time of or immediately subsequent to the injury. In the meantime definite information should be obtained by expert study of the offending animal. The incubation period is from fourteen to one hundred days according to Frazier in Keen's Surgery, the average being about fifty. Treatment should always be begun if possible within one week from date of bite for if properly administered within this period little fear need be entertained of failure.

The Malevolent Fly.—As the warm months approach our attention is drawn again to the fly and its relation to disease.



There is hardly any pest that is more potent for harm in the aggregate than the ordinary domestic fly. For several years, the "swat the fly" movement has been vigorously pushed by sanitary workers, but gradually it is beginning to be realized that the curse of the fly can never be overcome or removed by any crusade or attack on flies themselves. The solution of the problem is prophylaxis, in other words, a campaign of prevention. Few appreciate the enormous fecundity of the average female fly. According to a writer in *Public Health*, in ten days from the time the female fly deposits her eggs, 150 additional flies are hatched. As is well known, the percentage of females is much higher in the insect world than it is among mammals. Even, however, if we concede that half the newly hatched flies are males, the seventy-five females will each deposit 150 eggs, which, within ten days will produce 11,250 flies additional. Half of these, 5,625, are, we concede, females; within ten days more they have added 843,750 to the fly population. Half of this number, 421,875, will, ten days later, produce the huge number of 63,281,250 flies—making a total of 64,-

136,401 flies produced within forty-one days from the time the first fly emerged.

Of course, these calculations are based upon the pure supposition that half the flies are males—which is scientifically conceded to be a rather liberal masculine proportion. Hence the total figure at the end of forty-one days is apt to be much larger than the sufficiently large figure that results from the foregoing calculation.

It can readily be seen, therefore, that the only course that offers a sure reduction in the number of flies is to prevent their breeding. As a writer in the *Med. Press and Circular* aptly says, "without filth there would be no flies." Refuse and manure heaps are their favorite breeding-grounds. No such collections should, therefore, be permitted to exist in proximity to inhabited dwellings. Manure heaps, wherever they exist, should be treated in such a way as to prevent the development of the larva. Several investigators and the Department of Agriculture particularly have shown that this can be done cheaply and efficaciously by the use of commercial borax, which, in proper amounts, has no deleterious effect on the fertilizing value of the manure. This is a matter that should be taken in hand without delay by all health authorities. Householders, however, can do much to protect themselves. Besides using great care in preventing the accumulation of refuse near their houses, the houses themselves should be kept scrupulously clean. Above all, no food should be left exposed for the fly to infect. Every physician should help in this work, constituting himself a committee of one to urge upon all his patients and acquaintances the necessity of reducing in every possible way the breeding of flies. The result of such efforts is sure to be a notable decrease in the fly borne diseases.

For the benefit of those who have not seen it, we wish to call attention to Bulletin No. 118 issued by the U. S. Dept. of Agriculture which recommends the following treatment of manure:

Apply 0.62 borax to every 10 cubic feet of manure. Apply borax particularly around edges; sprinkle with 2 or 3 gallons of water. This treatment should be repeated with each addition of fresh manure. Borax prevents their hatching.

Don't use more borax than recommended above.

MODERN REMEDIES

Edited by Dr. J. W. Wainwright.

Sparteine.—George E. Pettey, (*New York Medical Journal*, April 3, 1915), declares that differences of opinion concerning the value of sparteine result from a misunderstanding regarding the proper dose; some authors placing it from one-tenth to two grains, others one-fifth of a grain or less. Pettey holds, however, that fractional grain doses are of questionable value, while doses of from one to two grains will insure great confidence in its efficiency, both as a heart tonic and diuretic. Sparteine differs from digitalis in that it exerts as much tonic effect on the heart muscle as digitalis, but that it is a vasoconstrictor while sparteine is a vasodilator.

Summing up the advantages of sparteine, Pettey states that in medicinal doses (two grains) sparteine is practically nontoxic. This dose is effective and is required at intervals of four to six hours to establish and maintain the full physiological effects. It is a reliable nonirritating diuretic, suitable for hypodermic use. Is our most prompt and dependable cardiac tonic, free from objectionable byeffects. It adds tone to the heart muscle and increases the force of its action, while, at the same time, by dilating the arterial capillaries, it reduces the resistance against which the heart is called upon to propel the blood. It is a true heart tonic; does not depress the cardiac muscle of a human being, but on the contrary acts as a positive and powerful tonic.

Crotalin in Epilepsy.—Jenkins and Pendleton of the State Hospital, Raleigh, North Carolina, summarize their findings thus in the *Journal American Medical Association*, November 14, 1914. The treatment was to determine the number of convulsions for three months previous to treatment with crotalin, compared with the number occurring during the first, second and third periods of three months each under treatment with crotalin and three months subsequent, or after treatment was discontinued altogether.

Treatment was begun the last week in March, 1913, upon forty-nine patients. Dur-

ing January, February and March previous to treatment with crotalin there were in all 1,275 convulsions. During April, May and June, the first period of treatment when 10 minims were given twice weekly, there were 1,640 convulsions. During July, August and September, the second period of treatment, when 10 minims were given once a week, there were 1,547 convulsions. During October, November and December, the third period of treatment, when 5 minims were given once a week, there were 1,493 convulsions. Treatment with crotalin was then discontinued (February, 1914) and sterile water used instead of the venom in order to retain whatever psychologic effect might be present, and the number of convulsions recorded during March, April and May. These were found to be 1,361. This tabulation would indicate that not only does crotalin not decrease the number of convulsions, but actually increases them and in direct proportion to the amount given. There was no more improvement in those under treatment with crotalin than in those taking the usual institutional treatment.

Radium Treatment for Fibroids.—Howard A. Kelly, (*Surgery, Gynecology and Obstetrics*, March, 1915), reports that massive radium treatment of uncomplicated fibroid tumors is the best procedure, as it stops the excessive flow during menstruation; sometimes in younger women it will regulate without stopping it altogether. It reduces the size of the growth in most instances, relieves pressure symptoms and has caused large tumors to disappear.

Kelly continues: A fibroid tumor is not a malignant growth; therefore any method of treatment which will give relief to the symptoms will be the method of choice, provided it at the same time assists in avoiding the various risks of an operation. If radium is tried and fails, the operation can be undertaken without added risk. Further he asserts that while a recent radium treatment often makes the subsequent radical operation for cancer of the cervix more difficult, there is no reason to anticipate a like result in fibroids.

He concludes that with increased experience and improved technic it will be possible to relieve all patients of hemorrhage,

and in most cases do away with the tumor, without serious discomfort, risk or confinement to bed for more than two days.

Novocain Anesthesia in Normal Labor.

—Injections of two per cent. of novocain with adrenalin solution are made into the pudendal nerve with a 5 c.c. Record syringe, the technic being as follows: The needle is inserted posteriorly between the tuberosity of the ischium and the perineum, the patient having been placed on her back with the thighs flexed on the abdomen; the needle should take the direction of the lesser sacrosciatic foramen. Inject 2 c.c. of the solution while slowly withdrawing the needle. When the needle lies directly under the skin 0.5 c.c. is injected; the remaining 2.5 c.c. is to be used in a similar manner on the opposite side. In obese subjects double the above quantity may be found necessary to insure anesthesia. The injection should be timed to act during the last part of the second stage of pregnancy when pain is caused by stretching due to the progress of the descent of the head. This is of the greatest importance in primiparae. Anesthesia is in evidence within five to seven minutes after injection is made.

Treatment of Sciatica.—Clemenko, (*New York Medical Journal*, January 25, 1915), states that sciatica as well as other forms of neuralgia, may be an expression of some constitutional disease, or loss of metabolic equilibrium. It is therefore of the utmost importance to investigate the etiology. Rheumatism, gout, anemia, or quite often diabetes, is found to be the underlying cause. These diseases if present, must receive appropriate treatment. Malaria and syphilis, particularly should be considered as possible etiological factors. In the earliest symptoms of tabes, the shooting pains, often simulate sciatica.

General treatment should be based on the etiological factors. The diet should be free of purin bodies, a lactovegetarian diet being the best suited. Of drugs, aspirin in large doses when the kidneys are not affected, is often of benefit. Opiates should be used sparingly. Hot applications are often

serviceable as is counterirritation and massage often of benefit.

Vaccine Treatment.—So great an authority as Theobald Smith declares that it is obvious that vaccination in the course of disease is not a matter to be taken lightly, for each case presents its own peculiar problems which are to be studied, not only that the vaccines may achieve possible success, but that they do no harm. He who administers vaccines or advises their use should have a thorough training in experimental and comparative immunology. Not only should he be on terms of intimate personal acquaintance with the facts and theories of infection and immunity, but he should know how to prepare and evaluate the vaccine to be used. We need vaccinators who are specially trained and who will work in cooperation with the clinician. It is unreasonable to expect one to be both vaccinator and clinician as outlined, but we should have the cooperation of the two men sharing the responsibilities involved in this line of work.

Foligan.—A domestic medicine long employed in infusion as a sedative for children is made from orange leaves. Epstein, (*Deutsche Medizinische Wochenschrift*, October 22, 1914), has had prepared a purified extract of orange leaves and given it the name of Foligan. Analysis of the extract does not show any constituent upon which a sedative action might depend, and yet its clinical use proved it to be mildly sedative in a large proportion of cases. In doses ranging from 0.1 to 1.0 grain it showed decided sedative action, while in doses of 1.0 to 1.5 grain it often acted as a mild hypnotic. There was no effect in any case with pain. Epstein regards Foligan a purely mild sedative and hypnotic when administered in simple cases of nervousness or insomnia. There was no tendency to tolerance or toxic action observed.

Venous Stasis or Congestion in Rheumatism.—J. S. Lancaster suggests a passive congestion in the treatment of acute articular rheumatism which, being a systemic infection with particular affinity for

joint structures, this procedure will aid nature by flooding the involved structures with antibodies. Surgeons employ venous stasis in the treatment of other infections with good results.

When the salicylates are being given in rheumatism, they remain, because of the alkalinity of the blood salicylates which are not germicidal. If, however, the salicylates circulating in the blood stream can be made to encounter a greatly increased quantity of carbon dioxide tension, the salicylic acid will be released to exercise a pronounced germicidal effect determined by the amount of the salicylate given. And this disintegration is hastened in the presence of tissue fluids of an inflamed joint which are acid, rather than the circulating blood stream.

Pituitary Extracts vs. Twilight Sleep.—S. W. Bandler, *Medical Record*, January 9, 1915, states that in pituitary extract we have the greatest aid introduced into the field of obstetrics in the last twenty years, and that its use can be highly recommended in the vast majority of cases in which birth per vaginam is possible without corrective procedure. As to "twilight sleep," from the experience the author has had with morphine, narcophin, hyoscine and scopolamine, he has gained the impression that these tend to inhibit and nullify the activity of pituitary extract. If this is a fact, the strongest criticism which can be made lies against this method; for anything which prolongs labor and interferes with an agent as valuable as pituitrin, one which shortens labor to such a marvelous degree, loses most of the advantages claimed for it. Especially from the standpoint of the physician who prefers not to spend more than an occasional few minutes at the patient's bedside the advantages of the pituitrin method compared with the narcophin, scopolamine procedure are certainly evident.

Soamin in Epidemic Cerebrospinal Meningitis.—Low reports (*British Medical Journal*, February 27, 1915) on the treatment of epidemic cerebrospinal meningitis, mainly by Gilks, and Shircore and Ross in Africa. Intramuscular injection of five grains of soamin on each of the first two days of treatment, followed by three

grains on the fourth and if necessary, one or two additional daily doses of the same amount, gave seven recoveries in eight consecutive cases. These small doses do not tend to produce untoward byeffects, but seem to be perfectly safe. The meningococci in the spinal fluid were reduced in number or seemed to have completely disappeared after this treatment.

Thigan.—Is a solution of thigenol and silver, one c.c. containing one mg. of silver. It is declared beneficial in the treatment of gonorrhea by Saalfeld in the *Munchener Med. Wochenschrift*, February 23, 1915, in injections of ten c.c. into the urethra and retained for fifteen minutes. The injections to be repeated from three to six times daily, depending upon the degree of acuteness of the infection. The treatment should be continued for one or two weeks after the microscope fails to disclose the diplococcus. It is said to be nonirritating. Symptoms improve and the secretion rapidly disappears. It can be used in the acute stage of gonorrhea.

Atropine in Dysmenorrhea.—E. Novak, (*Journal American Medical Association*, January 9, 1915), states that atropine diminishes the irritability of the autonomic nerve endings in the uterus. His experience has been most encouraging by following the plan of Novak of Vienna by beginning just before menstruation three times a day a pill of 0.5 mg. of atropine. The results appear to be as satisfactory as when a solution is injected into the cervical canal without the danger of infection. He has frequently administered somewhat larger doses than that advised by Novak, and has found that patients who respond most favorably are those in whom the atropine has been pushed to the point of tolerance.

Distilled Water.—L. L. Von Wedekind, (*Medical Record*, January 9, 1915), who is a Medical Inspector in the United States Navy states his belief that such practice as the general use of distilled water will secure the elimination of toxins leading to arterial changes, and also the elimination

of water born diseases. Distilled water, hungry for soluble ingredients, has its appetite satisfied in coursing through the body and removes excess up to its capacity, until excess ceases to exist and is ever ready to meet an emergency. In the prophylaxis of arteriosclerosis, the all important point is to discover the high blood-pressure, while it is still functional; so too, in gouty or rheumatic arthritis. It is to be understood that this measure is not suggested as a treatment for diseased conditions, but it is urged that distilled water should be used for cooking and drinking.

Morphine as an Analgesic in Obstetrics.

—Bertrand, (*Press Medicale*, December 3, 1914), gives his experiences with injections of morphine in labor. It was found possible by judicious use of morphine hydrochloride to obtain a deep and safe analgesia, with complete relief from subjective discomforts. Two c.c. of a two percent. solution may be given as an initial dose, with 0.75 c.c. additional if prolonged analgesia, which lasts on an average for seven hours, is desired. No impairment of uterine contractility was noted, labor being, in fact, apparently shortened. Frequently the child was born more or less apneic, but this was readily overcome by the customary measures in such cases, and even considered a possible advantage in cases where premature respiration is apprehended.

Antityphoid Vaccine in Gonorrheal Rheumatism.

—B. Bloch in *Correspondenzblatt für Schweizer Aerzte*, October 31, 1914, is reported by the *New York Medical Journal*, January 2, 1915, to have cured a case of gonorrheal rheumatism with four injections of antityphoid vaccine, two of 0.5 and two of one gram. It is stated that the author was equally successful in two other cases. Each injection was followed by a febrile reaction with subsidence of joint symptoms. He naively imputes the benefit in these cases to reaction rather than to any specific action on the part of the vaccine.

Sodium Bromide in Gastric Disturbances.

—Levin (*Quinzaine Therapeutique*,

April 25, 1914), declared that pain, of secretory and motor disturbances, are readily controlled by sodium bromide, the action of which is easily understood if the underlying cause of the dyspepsia is considered to be irritation of the solar plexus. The remedy is given in fifteen grains twice daily with meals and acts with greater constancy than alkalies, opiates, belladonna, etc., whether serious organic disease, such as ulcer, cancer, syphilis, is present or not. Spasm of the cardiac orifice or pylorus is relieved. With sodium bromide and bismuth subcarbonate, the latter being possessed of a few special indications, nearly all gastric disorders can be appropriately treated.

Tonsilar Extract in Diabetes Mellitus.

—Farmachidis and Vattuone, (*Reforma Medica*, December 19, 1914), make reference to the glycolytic action of tonsilar extract when injected into animals, whereby they were encouraged to try them in diabetes in man. They had used liver extract, thyroid, suprarenal, intestinal juice and the duodenal mucosa without much success. They then used intravenously daily doses of two to twenty c.c. and found a temporary primary increase in glycosuria, followed by a rapid decrease. There was marked improvement also in the other symptoms, with increase in weight and muscular power. Acetonuria, in one of their cases, disappeared after two months' treatment.

Salvarsan Locally.—Achard, (*Monde Medical*, January 5, 1914), reported prompt cures in cases of Vincent's angina by local applications of salvarsan. Netter, he states, treated necrotic stomatitis following scarlet fever with this agent. It also proved useful in pyorrhea alveolaris. Leg ulcers were treated with an ointment of ten per cent. salvarsan, healing rapidly. Levy-Bing obtained good results from the application of neosalvarsan in chancroids and ulcerations of and about the genitals which exhibited a phagedenic tendency.

Iodine and Serum Treatment for Tetanus.—Ten cases of well developed tetanus

were treated with serum injections together with usual measures by Auregan, (*Lancet*, February 27, 1915), four of whom recovered and six died. Identical treatment was employed in fourteen other cases with the addition of colloidal iodine intramuscularly administered as well as on dressing to the wounds. Of these ten recovered and four died, giving a percentage of approximately sixty-nine recoveries. Auregan urges the value of early tracheotomy to prevent death from laryngeal spasm, as well as the use of camphor to support the heart.

Chlorinated Lime in Gangrene.—Vincent, (*Press Medicale*, October 22, 1914), reports treating gangrenous wounds with a mixture of fresh chlorinated lime with ten parts of powdered boric acid. He first cleanses the wound and then dusts the above powder over it and the surrounding skin using a generous quantity. In from two to three days the wound is changed to a healthy condition. New dressings are employed in twenty-four hours providing there is much secretion; otherwise the dressing is not removed for forty-eight hours.

Sodium Arsanilate and Sodium Arsenate in the Treatment of Mycosis Fungoides.—Wolff, (*New Orleans Medical and Surgical Journal*, July, 1914), reports excellent results in three cases of this obstinate affection with injections of these agents. In the case of a man thirty-three years old, a diffuse papillomatous eruption disappeared completely after seventy injections of sodium arsanilate (soamin) and remained well for three years, when two papillomatous lesions appeared on the chin.

Glycerine in Bromidrosis.—Benious, (*Lancet*, December 5, 1914), reports upon the successful use of glycerine applications thoroughly to the soles of the feet and toes before putting on the socks. He used it in two cases; boys of fourteen years in whom the trouble had persisted for months in spite of efforts of cleanliness and the application of drying and antiseptic powders.

RATIONAL ORGANOTHERAPY

Conducted under the editorial direction of Dr. Henry R. Harrower.

No phase of manufacturing pharmacy or therapeutic practice is securing so much attention both by business men and physicians as the preparation and use of the numerous extracts of various animal organs.

No Arabian Nights romance of Aladdin's magic lamp is more marvelous than the recital of a few of the things that rational organotherapy is now making possible to the profession. In the past ten or fifteen years this branch of therapeutics has undergone the most remarkable evolution. Out of the dim past of guesswork and charlatanry is emerging a great and useful science, with its clinical possibilities first hinted at by physiologists and then thoroughly grounded upon the solid rock of clinical experience.

Organotherapy, freeing itself from the bonds improperly placed upon it during the zenith of the activities of the great Brown-Sequard, is being studied and applied with increasing frequency and vigor by those on the firing line of progress in medicine.

The medical profession, with certain unfortunately conspicuous exceptions, has not settled down into the stultified belief that all good things have been accomplished. It is looking ahead, and not least among the bright prospects before it is the increasing knowledge we are attaining on the action and broadening possibilities of the hormone-bearing extracts.

In the prophetic words of Leonard Williams: "Today and tomorrow, and the day after, are foreordained to the physiologist, the physician, and the therapist. Their hour has come through the agency of the internal secretory glands, which already unfold before the astonished view of the seeing eye, a land of promise beside which the vast territories conquered by Lister and Pasteur are destined to pale into honorable

insignificance. The ductless glands and their hormones come to us as peaceful conquerors who brook no denial. They lighten our darknesses and show us miracles. In studying them and endeavoring to unravel their intricate and esoteric mysteries, one seems ever and anon to be on the trail of the Great Secret, and in danger of losing one's mental perspective."

The Dual Function of Certain Glands.

—It is quite remarkable how many of the glands of internal secretion are virtually combined organs with quite widely dissimilar structure and function. Among the better known endocrinous glands we recall the adrenals, in which the cortex and the medulla are quite different, the former exerting a nutritional and detoxicating influence, while the latter exerts its well-known influence upon the vascular musculature and sympathetic nervous system. The ovary, too, is made up of at least two histologically different parts, some say three. These are the stroma, the Graafian follicles and the corpus luteum of pregnancy. Of these components the corpus luteum controls the growth and nutrition of the genitals, as well as periodicity and production of the cyclical changes (Frank) while the stroma of the ovary is said to be concerned in the nutrition of the uterus and adnexa. The large and peculiarly obvious luteal bodies of pregnancy exert a much more decided internal secretory activity than the miniature follicles, and it is from these larger bodies that the therapeutically active extract is now made.

The pancreas, with its now fairly well-known islands of Langerhans, has two quite distinct functions, the acinous portion producing the ferments or rather the profer-

ments which are then activated by the action of secretin, while the Langerhansian islet tissue produces the internal secretion which controls carbohydrate metabolism and is in von Noorden's words: "The brake to the sugar factory." Incidentally the secretory activity of this tissue is not influenced by secretin. Some have insisted that these two dissimilar parts are morphological stages of the same thing, but this is not borne out by recent experimental work.

While the structure of the thyroid is not sufficiently definitely differentiated to call it a gland with a dual structure, it is quite certain that the thyroid produces several hormones and that the variations in the conditions of hyperthyroidism should really be called dys-thyroidism, and a prominence of one class of symptoms in certain cases as compared with another class of symptoms in other cases has been construed as an indication that in one series one internal secretion has been modified, while in the other an entirely different one has been influenced.

The most definite of all histologic and functional differences between two portions of the same organ is evidenced in the pituitary body, where the anterior or glandular lobe is joined with the posterior or neural lobe by still another tissue, the so called *pars intermedia*. Extracts of the anterior lobe until recently were not considered to be therapeutically active, simply because their activity was so very much less marked than that due to extracts of the posterior lobe. We now know that the anterior lobe is concerned in the control of development and metabolism, since disease or partial removal brings about a condition of adiposity and asexualism and reduces the cellular activities, so that there is a subnormal temperature and marked asthenia. The anterior lobe cannot be removed without causing death, while the infundibulum or posterior lobe may usually be removed with impunity, but the active principle obtained from it, as is well known, is one of the most remarkable of all the organotherapeutic products, exerting its principal function upon unstriped muscle, particularly upon that of the gravid uterus.

Still other glandular organs have a dual function even though there is no obvious diversity of cellular structure as in the cases just mentioned. The alimentary

canal as a whole seems to have a double role and beside the pancreas already referred to, apparently the salivary glands, the intestine (especially the duodenum), the liver and even the pylorus also produce internal as well as external secretions.

Is Secretin Destroyed in the Stomach?

—There has always been a certain degree of controversy between the technical physiologists and the practical clinicians, and this is particularly true when the internal secretions are under consideration. Not every experiment in the physiological laboratories can be duplicated in clinical practice, and not every practical experience harmonizes with the results to be expected from a purely laboratory consideration of the subject. As a result of this, there are two quite distinct positions taken by certain writers on the internal secretions and their possibilities in therapeutics. The physiologist sees things purely from his viewpoint and has little or no interest in therapeutics. He applies his ideas on his dogs and other animals in a very different way from the clinician in his practical work. He makes his experiments in a manner which it is rarely possible to duplicate in practice, for the intravenous method is not always advisable or acceptable.

We cannot consistently consider the position of the ultratechnical physiologist faulty any more than they can consider the conclusions of the ordinary practitioner as improper. The question of the therapeutic availability of the alimentary hormone, secretin, is an excellent example of the conflicting views which may come about.

For years physiologists have been convinced that secretin exerts a positively remarkable influence when used in the laboratory according to the regulations laid down therefor, but Professor Starling some years ago led the writer to understand that secretin was not seemingly available when given by mouth. When Starling tried it—on his dogs, of course, for he is a physiologist—the results were apparently negative because he compared this influence with that resulting from intravenous injections. In February a writer in one of the special Internal Secretion numbers of the *Practitioner* (Langdon Brown, "The Internal Secretions of the Alimentary Canal," *Practitioner*, Feb. 1915, p. 247), states that se-

cretin is not absorbed from the alimentary canal or at least is not active when given by the stomach and hence "oral administration is therefore useless." Now comes the *Journal of the American Medical Association* which in the issue for May 1, 1915, commits itself to the following: "There is no evidence that secretin in any form is physiologically active when administered by mouth." This is a very definite statement, and it is capable of only one construction. It virtually denies *in toto* the results physicians claim to have had with home-made preparations of secretin and the various proprietary preparations of which there are now quite a number.

The writer has personally administered secretin in various forms to many patients some of whom happen to have been relatives with whom he lives. He has been able therefore to watch them even more closely than he could watch a patient in general or hospital practice. The statement that secretin-bearing products are not active when administered by mouth is not true. There is no other way to state this. There seems to be no way for a physician to pass his judgment upon this subject unless he does it by making a careful, conscientious and extensive clinical trial. This has been done by not a few physicians. Within ten days of the date this is written a discussion on the therapeutic possibilities of secretin was held at a meeting of the Medical Association of the Greater City of New York at the New York Academy of Medicine and not only did the essayist state that secretin was active, and explain its scope and mode of action, but a number of physicians in the discussion which followed, thoroughly agreed with him, and two of them exhibited themselves as clinical cases, and gave personal testimony to the efficacy of secretin when taken by mouth.

It may be that the gentlemen responsible for the above statement regarding the uselessness of secretin when given by mouth, based it upon the statements of physiologists which may have crept into medical literature, or they may have stated it from the standpoint of the pharmacist or chemist as one might expect, but we cannot believe that they have tried it, even to a limited extent in clinical practice.

Another statement which was made in the course of the above report is worthy

of the briefest mention. This insists that "no evidence has been presented that the absence of secretin is the cause of gastro-intestinal diseases"—nor do we recall any evidence that the active principle of the posterior lobe of the pituitary body is absent or even reduced in quantity in cases of delayed parturition!

Proof that Secretin Therapy is Possible.

—It may be that the foregoing does not convey sufficient *outside* proof and the subject is of sufficient importance to devote a little more space to its consideration. There are several papers in the literature which either directly assert that secretin is of value when given by mouth, or from which it may be inferred that it exerts a definite degree of activity. In the report questioned above, mention is made of the uselessness of secretin as the treatment of diabetes mellitus, reference being made to an article which outlines the original application of secretin in therapeutics (Moore, Edie and Abram; "On the Treatment of Diabetes Mellitus by Acid Extract of the Duodenal Mucous Membrane," *Biochemical Journal* (Liverpool), 1906, i, p. 28). These writers presumed that secretin might start up the work of the pancreas and influence its internal secretion just as it had been so ably proved by Starling and his associates that it released the external secretion. A number of cases were treated, and as a preliminary report this was encouraging. The subject appeared to be of sufficient promise for the *Journal of the American Medical Association* to publish a leading editorial on the subject (*Jour. A. M. A.*, 1907, xviii, p. 698) from which the following is quoted: "The discovery of secretin opens up an entirely new field of investigation in connection with diabetes mellitus. . . . The results that have been accomplished so far are very suggestive although still too few to be considered as at all conclusive."

Unfortunately, however, the clinical results following the use of secretin (in diabetes, it must be remembered) were a failure. The cases did not progress and a second report by Moore and his associates in the same year (*Biochemical Journal*, 1906, i, p. 446) recorded their disappoint-

ment. Other papers were written on this subject by Bainbridge and Beddard (*Guy's Hospital Reports*, 1907, lxi, p. 161), and Foster (*Medizinische Klinik*, 1907, iii, p. 446). They simply emphasize the possibilities of this method and conclude that it is not a dependable remedy in diabetes.

It happens, however, that the papers of Moore, Edie and Abram, while considering the possibility of secretin as a remedy for diabetes and later showing its inutility in this disorder, at the same time demonstrated in quite a definite manner that the secretin extract which was given by mouth was by no means inert. It seems entirely impossible that the initial prospects of therapeutic worth that were held out in the first paper were the direct result of the action of secretin, not on the internal secretory activity of the pancreas, but on its external secretory capacity with the consequent enhancement of digestion. This is best shown by excerpts from these papers and it is left to the reader to decide whether secretin is really inactive when given *per os*.

In the first report of Moore, Edie and Abram it appears that the duodenal mucosa therapy caused a reduction in the glycosuria as well as benefit to the nutrition, and care was taken to show that these results were not attributable to hospital care or other treatment. In their conclusions they state that when the extract was given by mouth at least "it appears to stimulate the functional activity of the duodenum." In their second communication they write: "In the majority of these cases there has been no appreciable fall in the output of sugar; in some of these cases, however, there has been noted an improvement in digestion and in certain cases the weight has increased." Most of the cases which are reported with charts show a decided temporary influence upon the sugar excretion, but one report stands out above its fellows as conclusive evidence of the influence of secretin upon digestion: "The patient had been under observation for six months before treatment, and the sugar was not reducible by diet. Almost at once the dyspepsia from which he was suffering was removed and general nutrition improved to such an extent that he gained over eighteen pounds in weight, and this improvement was accompanied by a complete recovery of his physical and mental energies."

This certainly seems like real evidence in favor of secretin as a remedy for certain forms of digestive trouble. There are of course, other references in the literature to the therapeutic possibilities of secretin, but they could not well bring any more conviction than the preceding statements. By far, the greatest enthusiasm for the possibilities of secretin will result from its direct use and, fortunately, the conditions in which it is useful are common enough.

Facilitating Bacterin Therapy.—Occasionally, quite often in fact, a condition which under ordinary circumstances should respond to the administration of bacterial vaccines is a failure, while in another almost identical case, the results are most encouraging. Apropos of this, a correspondent of *Clinical Medicine* writes: "I want to find out why it is that sometimes I get results (from bacterial vaccines) so brilliant as to seem almost miraculous, while in the very next case, I may fail absolutely." There are two factors that are absolutely essential to the success of this form of therapeutics—a condition in which the organism is capable of responding to the stimuli brought about by injecting the bacterin and a suitable remedy. So far as this latter is concerned, it is not within our province to discuss. The question of stock and autogenous vaccines is a large one and the importance of applying "vaccine therapy" in a sensible scientific manner is of paramount importance and, unfortunately, frequently does not have the really scientific consideration that its importance deserves.

With the resistance of the body and its power to react to various therapeutic stimuli, we can consistently occupy ourselves for a few moments in this department. Undoubtedly the ductless glands play an important part in the reaction of the body to diseases as well as to therapeutic procedures. As a matter of fact Wright, the discoverer of the principles of the vaccine therapy, stated that all the substances concerned in the production of immunity and resistance must be considered as produced by the organs of internal secretion. We also know that certain of the ductless glands have a particularly intimate relation to immunity. Chief among these is the

thyroid, which with the pancreas and liver, are the glands chiefly concerned in producing resistance to infection.

Quite frequently it will be found that patients who would ordinarily be supposed to react to suitable vaccine therapy are suffering from what might be called hypoendocrinism, or as the French call it, "*hypocrinie*," i. e., a general reduced action of the ductless glands, with a corresponding diminution in the production of their essential hormones. Now if these ductless glands are working at half-speed, obviously the activity of the body to all stimuli is reduced—the patients are run-down and are not only more susceptible to disease, but less susceptible to treatment. In such cases it might be a good suggestion to consider the possibility of the probably complicating pluriglandular insufficiency and apply pluriglandular therapy as a reasonable and prospectively helpful procedure. A limited clinical experience indicates that this is a reasonable idea and it is suggested that the use of bacterins in the treatment of chronic infections may be advantageously supplemented with a course of tonic pluriglandular medication, especially in those individuals who are obviously in a run-down or hypocrinic state.

The Parotid—An Internal Secretory Gland.

—In the correspondence columns of AMERICAN MEDICINE last month, Dr. W. J. Robinson, in an interesting communication, draws attention to a relation between the parotid and the prostate glands. He remarks that "still less known is the fact that an attack of parotitis may cause atrophy of the prostate without apparent involvement of the testicles and the spermatogenic function. The sterility may, however, be just as absolute nevertheless." He goes on to report seven cases of partial or complete prostatic atrophy which seemed to be solely due to an antecedent parotitis.

This relation between the prostate and other ductless glands, particularly the gonads, is fairly well-known, for among the classical complications of mumps, it will be recalled, is inflammation of the ovaries or testicles. By far the most common complication of mumps in males is orchitis.

A number of Italian physicians have re-

marked the frequency with which acute pancreatitis follows mumps and have directed special attention to the fact that these glands—the parotid and the pancreas—were in some way connected by hormonal channels. Additional evidence is offered by Dracinski and Mehlmann (*Deut. med. Wchnschr.*, July 30, 1914) who report three cases of acute pancreatitis which occurred during a recent epidemic of mumps in Bukowina.

This definitely connects the principal salivary gland with no less than four of the internal secretory glands, and doubtless as other observations become available, we will find that the parotid is just as much a part of the endocrinous system as any of the other glands with dual functions which are known to be comprised in this remarkable system.

Parotid extract was at one time recommended as a remedy for ovarian disease and about fifteen years ago extended reports appeared in the following medical journals: *Medical Times* (London), 1897, xxv, 398; *American Gynecological and Obstetrical Journal* (N. Y.), 1899, xv, 12; *American Journal of Obstetrics* (N. Y.), 1899, xi, 368. The authors of these articles—Bell, Mallett and Shoher—report that many acute ovarian troubles with pain, menstrual disorders and other evidences of pelvic congestion were controlled by 2½ to 5 grains of desiccated parotid gland three times a day, given for several months. Under the administration of this extract the pelvic exudate seemed to soften and the pain, both in the pelvis and the reflex headaches, disappeared entirely, with a concomitant benefit to general health and strength.

However, in these days, parotid substance is rarely used since it has been altogether superseded by the more recent and more efficient preparations of the corpus luteum. *It may be quite possible, however, that a combination of these two extracts would be more effective than either one alone.*

Suffice it to say that the parotid is not merely a salivary gland, but undoubtedly one of the glands of internal secretion and as such is a factor worthy of consideration by physicians who realize the importance of the internal secretory glands, both in general medicine as well as in therapeutics.

PRACTICAL NOTES.

Eclampsia.—"As an aid in eclampsia pituitrin is not surpassed."

Postpartum catheterization is practically always unnecessary when pituitary solution has been used in the course of labor.

The parotid gland is an internal secretory organ and extracts of it are said to have a favorable influence upon ovarian disorders.

Iodin and Thyroid Extract.—A minute dose, say gr. 1-100, of iodine sometimes renders a dose of thyroid extract much more active.

An Antidote to Morphine.—One writer remarks that pituitary solution is very useful in morphine poisoning as it antidotes its action quite markedly.

Tonsils and Adenoids in Graves' Disease.—Before anything serious is attempted in the treatment of hyperthyroidism remove hypertrophied tonsils and adenoids, if present.

Increasing the Urea Index.—It has been remarked that the urea index has been markedly increased following the use of secretin (from the duodenal epithelium) in digestive disturbances.

Hypocrinism (or hypoadocrinism) is a term destined to become more widely used. It indicates a condition in which there is a deficient production of internal secretions without special reference to one gland or set of glands.

The Postoperative Routine.—Pituitary liquid in 1 c. c. doses, intramuscularly, is a valuable precautionary measure following operations, since it favors heart action, stimulates peristalsis, overcomes meteorism and is also a diuretic.

Reinforcing Thymus Extract.—Small doses of adrenal substance have been suggested as a valuable addition to thymus extract. A combination containing $\frac{1}{2}$ grain total adrenal substance and 10 grains of thymus may be given three times a day.



Excessive Perspiration of the Feet.—The editor of the *Medical World*, (April, 1915), gives the following common sense advice for the relief of excessive sweating of the feet:

Have two or more pairs of shoes in use all the time, so that no pair is worn more than one day until after another pair has been used for a day. Likewise, have a clean and dry pair of socks for each day.

Soak the feet each night, for ten minutes, in a solution made by adding a dram of formaldehyde to a pint of water. If there are excoriations between the toes, do not use this—it will be too severe. Instead, make a solution of a heaping teaspoonful of crystals of potassium permanganate to a quart of water, and soak the feet for ten minutes, nightly, in this.

Dust the inner surfaces of the socks each morning with a powder made by incorporating a dram of salicylic acid in two ounces of boracic acid.

Occasionally, it will be found beneficial to take one-tenth grain of agaricin, hourly, for three or four doses each morning.

The Action of Calcium Salts.—The growing interest in calcium salts in therapeutics makes Jones' article (*Brit. Med. Jour.*, Mar. 20, 1915), especially valuable. He concludes as follows: 1. Calcium salts, when injected into the blood in small quantities, are excreted by the kidneys as phosphates, carbonates, and oxalates. 2. In larger quantities the bowel also takes part in the excretion, and the calcium is excreted as inorganic salt. 3. At a fixed concentration of calcium in the blood greater than the above, the kidneys are thrown out of action and all the excretion is performed by the intestine, until a point is reached where the quantity in the blood is again brought below the "toleration point," when the kidney again takes on its excreting function. 4. If the concentration in the blood is greater still, the calcium is excreted also as calcium soap by the intestine. 5. The excretion of large quantities of calcium through the intestinal walls has an astringent action, and causes diminished action and paresis of the intestinal movements. The feces cease to be excreted so freely, and if more calcium arrives in the blood the increased concentration of the calcium ion produces spontaneous intravascular clotting and death. 6. The calcium "toleration point," or the point of concentration of calcium in the blood above which the kidneys are unable to act, can be raised by injecting increasing doses of calcium chloride into the blood,

provided time is given for the animal to complete the excretion of one injection before the next is given. This action appears to extend the theory of immunity into the inorganic world, and shows that the body can react to calcium salts much in the same way that it reacts to an organic toxin.

Treatment of Recurrent Bronchitis in Children.—C. G. Kerley, *Archives of Pediatrics*, excludes sugar to a large extent from the diet particularly if the case promises to be difficult. Cow's milk is omitted entirely or skimmed milk is allowed if the case is obstinate. Children three to six years of age frequently gain from three to six pounds after one removes sugar from the diet and gives milk skimmed or none at all. The carbohydrates and fats in vegetables, cereals, and breadstuffs supply all the heat and energy required. Medium-weight underclothing or linen mesh should be used. The child is given a warm bath at bedtime, followed by a vigorous rubbing and sometimes by massage. Inasmuch as the so-called lithemic type is the individual most frequently affected, children of this type are given interval treatment with bicarbonate of sodium alone or with salicylate of sodium. If habitual constipation is present, a free daily evacuation of the bowels is insured by suitable dietetic and medicinal treatment.

GENERAL TOPICS

To Safeguard the Interests of the Insane.—At a meeting held May 5, 1915, the New York Psychiatric Society, all the members of which are specialists in nervous and mental diseases who are well informed and actively interested in the State system for the care of the insane and mentally defective, for the purpose of concisely stating the views and recommendations of the society in regard to the provisions which, in its opinion, should be made in the State Constitution for safeguarding the care and treatment of persons suffering from mental disease and defect, adopted the following preamble and resolutions:

Whereas, Experience has shown the advisability of safeguarding and shaping by constitutional requirements the essentials of an efficient and stable State system for the care of the insane and mentally defective, and

Whereas, No system can be efficient unless it is administered by specially qualified officials, therefore be it

Resolved, That this society recommends (1) that the State Constitution require the Legislature to provide for a State Hospital Commission, the president of which shall be a physician who is specially qualified in mental diseases and in institutional administration; (2) that the State Hospital Commission be given power not only to visit and inspect all institutions either public or private, used for the care and treatment of persons suffering from mental diseases, as at present, but also be given fiscal control of the State institutions for the care and treatment of such persons and general supervision; (3) that the State Commission on Mental Deficiency be given equal powers to those of the State Hospital Commission in regard to the institutions for the care and treatment of persons suffering from mental deficiency.

Resolved, That this society believes that a system of fiscal control of the State institutions for the mentally diseased and mentally defective by a Board of Control which would be independent of the specially qualified commissioners recommended in the preceding resolutions would be inefficient and would be detrimental to the proper treatment of the patients and to the interests of the State in dealing with the important problems of mental disease and deficiency.

Resolved, That the secretary of the society be instructed to send a copy of these resolutions to each member of the State Constitutional Convention, and that the Committee on Mental Deficiency be authorized to represent the society in co-operating with other organizations which are interested in the Constitutional provisions relating to the mentally diseased and defective.

A Woman's Number.—The May issue of the *Medical Review of Reviews* is to be a Woman's Number. All the articles contributed will be from the pens of women physicians whose work has achieved national importance. With the growth of the feminist movement, the economic position of women has attracted universal attention. As medicine was practically the first profession open to women, it is only proper at this time to consider whether their entrance into the medical profession has been of benefit.

In order that women may present testimony by which they may be judged, it has been deemed advisable to give them an entire issue to present the evidence of the value of their accomplishments. In the laboratory, in the hospital, in institutions, at the bedside, and in public service, women physicians have performed a valuable function. As a tribute to their earnestness, enthusiasm, modesty, energy perseverance, and scientific acumen, the May number of the *Medical Review of Reviews* will be dedicated to the women physicians of America.

American Medicine

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and

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The importance and significance of oral hygiene has now become firmly impressed upon the minds of members of the medical profession everywhere, and to a lesser extent, upon the consciousness of the general public. If a person has not a clean mouth and sound teeth, or a clean mouth and good artificial teeth, he or she is not in good health and runs the risk of soon being seriously and permanently affected. It is better to be without teeth than to have carious ones. For diagnostic purposes the modern physician is more likely to inspect the mouth and teeth than to look at the tongue.

The point should be borne in on mothers and fathers that by insisting that their children care for their teeth, and practice mouth hygiene generally, many diseases will be prevented and in the majority of cases, good health will be assured. But before discussing the subject of mouth and teeth hygiene for the young, it will be fitting to draw attention to the injurious effect upon health that may, or rather will ensue from neglect of teeth and mouth in childhood.

In the first instance, carious teeth will bring about indigestion through the inability of the person thus afflicted to masticate properly, for the extra work placed upon the stomach by the ingress of unmastered food must in time impair digestion.

As the dental caries grows worse, so will indigestion, for the septic condition in the mouth will act more and more injuriously on the organs of digestion, while the fermentation in the stomach will react on the mouth and teeth until a vicious circle has been established. As time goes on, the absorption of septic products will more seriously affect the whole system.

Dental disease, as Dr. William Hunter has pointed out, is a cause of indigestion in consequence of being a continual source of septic poisoning and septic gastric irritation. The effect is not limited to a mere fermentation of food products, but actual infection of the mucosa with pathogenic organisms usually soon occurs. A chronic septic catarrh is probably set up with its melancholy sequence of other ills. The toxic effects are those due to septic absorption, and if unchecked, lead to various serious conditions. The local effects may be gingivitis, glossitis, catarrhal and follicular stomatitis, and, according to Hunter, tonsillitis and pharyngitis are by no means infrequently brought on by dental caries. Among the many diseases more or less due to defective teeth is rheumatoid arthritis. Rigg's disease, according to Goadby, is independent of decay of the teeth, but is probably due to neglect of

mouth hygiene. Recently there has been held by Fellows of the Royal Society of Medicine, London, a very instructive and interesting discussion on alimentary toxemia in which most of the best known London physicians and some of the best known surgeons and dental surgeons took part. The views expressed as to the connection between intestinal toxemia and a foul condition of the mouth and teeth were very much to the point.

Mr. J. G. Turner, one of the speakers, for instance, was sure of the existence of an alimentary toxemia due to dental sepsis. The components of dental sepsis and dental caries, pyorrhea, tartar, artifact causes of sepsis, were all governed by the root factor stagnation, stagnation of germs and soft, starchy and sugary foods. It might be termed germ-carbohydrate stagnation. Mr. Turner showed that both in man and in the lower animals dental sepsis ran parallel with the occurrence of germ-carbohydrate stagnation, citing the occurrence of pyorrhea and dental caries in South Sea islanders and in captive monkeys. The islanders made extensive use of cocoanuts and captive monkeys were fed largely on bread. Jaws of the seventeenth and eighteenth centuries showed far less pyorrhea than those of today. Fine ground flour was the determining factor. Dental sepsis, including the early stage of pyorrhea, was as common in children as in adults. Dental sepsis was a factor for evil long before pus was an obtrusive symptom or the teeth tender, and was accompanied by fetor, and fetor was as common in children as in adults. Others who joined in the discussion spoke quite as strongly in support of the view that dental caries and oral sepsis were fruitful causes of intestinal toxemia with its almost end-

less chain of diseases. It may then be taken as proven that decayed teeth and unclean mouths are, in the main, responsible for a long list of diseases and affections, and it may also be stated as a positive fact that the condition of children's teeth throughout the civilized world is deplorable and a caustic commentary on the boasted beneficial effects of our advanced civilization. In Great Britain, medical inspection of school children has brought out the fact that as many as 50 per cent. of children of school age have been found to suffer from serious decay of their teeth. In all European countries the situation in this respect is similar. Nor is it only in the old countries of Europe in which racial deterioration is said, and to some extent rightly said, to be going on at a far more rapid rate than on this side of the Atlantic, but in the United States and Canada medical inspection has shown that the state of school children's teeth is generally bad.

Heredity may have some influence on the teeth but is a comparatively negligible factor in the production of dental caries. The evil in order to be successfully eradicated, must be attacked at its roots by treatment and chiefly by prophylactic measures. Prevention is better than cure and therefore steps should be taken to prevent decay of the teeth almost as soon as an infant is born. The first essential is proper food, mother's milk if possible, for it is obvious that if an infant be well nourished its teeth and mouth will participate in common with the rest of the system in the general well being. This point was strongly emphasized by Professor Dieck who read a paper dealing with the teeth of children at the Berlin Congress in 1912. He also went on to show that dental de-

cay of the milk teeth is not, as so many mothers think, a harmless and natural occurrence. It is not only the untimely loss of the milk teeth in themselves that is to be deplored, but the germs of the permanent teeth which begin to develop in the first year of life may become very seriously injured by purulent disease of the roots of the milk teeth. For the sake of the permanent teeth then, it is desirable to care for the milk teeth, and if possible, save them from decay. There is another point too, to be considered; if the milk teeth are destroyed very early, the masticating process is lacking for years and thus an important formative incentive to the growth of the jaw is likewise lacking. Further, it is not the development of the jaw alone that is hindered, but at the same time the development of the strength of the permanent teeth and when the latter make their appearance later on, they often do not find sufficient room, their position is necessarily cramped and irregular and they are more liable to be attacked by caries. As a matter of fact, as soon as a child is old enough it should be taught to breathe through the nose and to clean the teeth with a suitable brush night and morning, for according to Dr. Walter G. Spence, writing in Allbutt's *System of Medicine*, it is on the regular use of the tooth brush and upon nasal breathing that the health of the mouth of the growing child largely depends. The teeth of all school children require systematic attention, and it may be added, treatment when necessary, so as to prevent or arrest caries. A carious tooth is a focus of infection, and if a first tooth, its cavity should be cleaned and kept so until the tooth is shed. If it cannot be properly filled, the tooth must be removed. Such teeth are sometimes left for fear of disturbing the

second dentition, but as pointed out before much more damage is done to the permanent teeth by leaving a focus of infection.

The cause of decay of teeth in infants, in young children, in older children and in adults is, in perhaps the majority of cases, an unsuitable diet. Dr. Dieck who has been referred to already, has pointed out that in Germany the exceedingly bad habit is prevalent of placing in the mouths of infants small bags filled with soaked biscuit and sugar to pacify them. All children in all countries probably eat more candy and sweet foods than are good for them. In this country they assuredly eat too much candy. So far as diet is concerned, it is very difficult to insist that a child, after it has reached a certain age, shall eat only what is considered good for it. Parents, themselves, as a rule, are ignorant on this point, and even when not ignorant, in this country at least, would have considerable amount of difficulty in strictly supervising the diet of their progeny. It would seem that the first and most important step to take in a campaign waged for the prevention of dental caries and of oral sepsis, would be to instruct mothers as to the vital importance of the hygiene of the mouth and teeth, and to demonstrate forcibly to them that bad conditions are mainly brought about by improper diet. In the case of infants and young children the parents can supervise the diet, that is if they know themselves what kind of food is calculated to do harm. In Germany, dental clinics have been started in Berlin and Strassburg. No doubt the principles of hygiene of the mouth and teeth can be taught to older children as a daily routine much better in school than at home, but with regard to infants, mothers must

be first instructed ere any real headway can be made in this direction. While preventive measures, successfully carried out, would be more efficacious by far and much more economical, a certain amount of dental treatment of school children is indicated. But this treatment should be of the best, for it is notorious that some, perhaps a good deal, of the dental work that is done is more harmful than otherwise. The beautiful gold teeth and gold capped teeth that one so often sees, are all too frequently but whited sepulchres, metaphorically speaking, covering corruption.

Dentistry, if done at all, should be done by a man who is not only a good mechanic, but one who knows anatomy and physiology. It has been proven conclusively that dental caries and oral sepsis exist among children everywhere to a hitherto unbelieved extent; it is also known that these conditions are a menace to the health of the race. What then is to be the next procedure? It would appear in the natural order of things that since medical inspection of school children has revealed this state of affairs, that a system of treatment should be the logical sequence. As hinted at before, a system of treatment would be immensely expensive and undoubtedly if preventive measures could be carried out effectively, the results should be such that ere long little treatment would be required. The situation is painfully clear and it remains to decide the plan of campaign. Undoubtedly the great need in the direction of improving the teeth and the condition of the mouths of the rising generation, and if possible in time eradicating dental caries and oral sepsis, is a widespread educative crusade, not only in schools but for the instruction of parents. The subject should be thoroughly ventilated, in

order that a general interest may be aroused and the community at large learn to appreciate the truth, that the state of the teeth and mouth is an index to health and to the physical well-being of a nation. In New York City the Board of Health authorities have been wide awake to the necessity for thorough supervision of the teeth of school children, and through the aid of efficient inspection and the maintenance of well managed dental clinics an immense amount of good has been accomplished. Other communities have taken up this important detail of school hygiene, and all over the country it is gratifying to note the growing recognition of the importance of oral cleanliness in the prevention of disease.

Poverty and Disease.—The intimate relationship between poverty and disease is too obvious to admit of argument. There are diseases which are essentially due to poverty. For instance, tuberculosis, in its active form, is often the result of poverty. Given the initial infection, and it seems to have been proven very conclusively that practically every person is infected in early life, and the influence of poverty with its deficiency of food and unhealthy environment will often lead to its development and progress. Thus can be seen the justification for the frequent statement that tuberculosis is a disease of poverty.

In these times of awful war, when the specter of poverty stalks through many lands, not only where war is being waged, but in neutral countries, the diseases due to want must develop and spread. In its essential features typhus fever is a disease of poverty and filth and there are many other maladies that owe their origin and

dissemination to these same causes. In this country, owing to the European War, unemployment is apt to increase rapidly; in consequence poverty will follow and disease will increase *pari passu*. But while, it is all too evident that poverty is the factor responsible for many and dire diseases, it must not be forgotten that there are certain diseases which are chiefly confined to the well to do. These are the affections due to over indulgence, errors in eating and drinking, and lack of sufficient exercise. Such diseases, owing to the great prosperity enjoyed during the past decade, have made great headway in this and a few other countries. Thus Bright's disease in New York has gained ground to an almost incredible extent, and the same thing holds true in all the other rich cities of the world. The pendulum is swinging, however, and as a result of European conditions, for many years to come, the diseases of poverty will far outnumber those due to wealth. The war is exhausting the nations of Europe, physically, mentally and economically, and it is only reasonable to expect the diseases of poverty to develop and spread to an extent never before known. Yet out of evil, good may come. Social conditions may be so greatly changed and the needs of the people become so acute, that the different governments will take steps to control poverty and by efficient organization prevent its recognized evils. Moreover, nations and states in times of peace are so interdependent that all must join forces and cooperate with each other to the end that poverty shall be reduced as much as possible throughout the civilized world. In the evolution of these efforts to better economic conditions the rich will benefit no less than the poor for they will be compelled to curb their appetites and thus will be removed the

main factor in the causation of diseases arising from self indulgence. All this may seem Utopian, but it is sure to come when mankind awakens to the possibilities of international cooperation.

The Proctologist and the Importance of His Work.

—It is remarkable what a vast amount of human suffering is located within that small area—the anorectal region. There is certainly no pain more severe than that of some anal fissures, at times so excruciating that the patient looks upon the act of defecation as a horrible affliction. Bleeding hemorrhoids are a source of great discomfort and the attacks of hemorrhage may be so profuse as to cause marked anemia and exhaustion. A prolapsing pile caught within the tight grip of the anal sphincter makes many a toothache pale into insignificance, and is there anything more aggravating and embarrassing than pruritus ani? These are but a few of so-called minor ailments which from the patient's viewpoint are of major import. Too many general practitioners take a limited interest in rectal diseases—too many fail to make careful examinations—so that it is not strange that patients become discouraged and drift into the hands of the quack. There is of course the esthetic side. Some medical men dislike to examine and treat rectal cases just as others do not care to handle genito-urinary cases, but such ultra-refinement has really no place in the practice of medicine. The practitioner should be sufficiently familiar with modern methods of examining the rectum to recognize the more common affections and be sufficiently conversant with their treatment to discriminate between those cases that will get well under topical

applications or operative measures with a simple technic, and those which demand a high degree of technical skill and experience. While most of the rectal work is still done by the general surgeon there is an increasing demand for the services of the proctologist. This is not surprising, for it stands to reason that the man who devotes his practice to a comparatively narrow specialty must needs acquire a diagnostic acumen and operative dexterity that can seldom be gained by one laboring in the broad field of surgery. Proctology is essentially an American institution, for although in England a number of men have gained eminence in this line of work, it has not been developed to the extent that it has here, as evidenced by the formation of a national association and the establishment of a journal devoted to this specialty.

Summer clothing should be selected with much greater intelligence than is shown by the average person. Only common sense is needed and as we have pointed out on numerous occasions in choosing underclothing it should always be of a material capable of readily absorbing body moisture and drying quickly. As for outside garments, similar judgment is necessary and these should be of light weight and of a color that will reflect and not absorb the sun's rays. Why people will continue year after year to wear heavy, dark colored clothing during the hot months is incomprehensible. Not only is such material much more uncomfortable, but the prevention of heat radiation from the body is bound to lower vital resistance and thereby increase susceptibility to summer ills. The universal use of light weight white cloth-

ing in the tropics is based on reason and practical experience. To wear dark colored, heavily woven clothing would be intolerable and increase the death rate to a marked degree. There is no sound objection to using equal wisdom in selecting our wearing apparel in northern zones when the season becomes tropical. A few independent individuals have had the temerity to don white garments, but the great majority go on sweltering with heavy, dark colored clothing. Our women folks show much more sense in this respect and keep cool and comfortable in their light weight, white dresses. Each year we have urged the necessity for reform and hope for the sake of those who have to toil in our cities during the summer months that sooner or later common sense may prevail in this matter of hot weather dress. An interesting experiment is reported in the current issue of *Popular Mechanics* that admirably supports our contention for the wider use of white apparel in the hot months.

Thus reports the experimenter in an attempt to illustrate graphically the relative values for summer wear of different colors in dress materials, an interesting experiment was recently conducted. Four strips of cloth, made of the same material and weight, but of different colors, were placed on a cake of ice and exposed to the sun. The fabrics were white, yellow, red, and black. The result showed in a striking way how white reflects the sun's rays while black absorbs them. The ice covered by the piece of white cloth was not melted to any appreciable degree during the test; that under the yellow strip was slightly depressed; a deep cut was formed beneath the red cloth, and a groove approximately twice as deep as that covered by the latter was melted under the black fabric.

The foregoing is quite conclusive, but no more so than the actual difference any one can observe on changing from dark to white clothes on some hot summer day. The experience will convert the most dubious.

Calcium in Phthisis.—An interesting clinical report on the use of calcium chloride in the treatment of tuberculosis, by Dr. Thomas Beasley, of Indianapolis, Indiana, appeared in the January, 1915, issue of *Indianapolis Medical Journal*.

Calcium chloride solutions, writes Dr. Beasley have not been found incompatible with the physiological functions of the human economy, on the contrary, the calcium salts have a peculiarly selective inhibitory effect upon the tubercle bacilli in living tissue. Dr. Beasley has had under observation 486 patients in various stages of phthisis upon which treatment with the calcium salts was used, the method of administration being by intravenous injection. None of these cases were engaged in occupations where calcium might have been absorbed directly. He also experimented with rabbits using the iodide and chloride of calcium intravenously successfully; the best results apparently being obtained from the chloride.

The treatment can be adopted in any stage of the disease. The doses in some cases reached 15 grains, beginning in every case with two grains, and repeating each fifth day to the number of five injections. The apparatus used was the ordinary Leur 20 c.c. syringe. The dose of calcium is given dissolved in 20 c.c. of freshly distilled water at a temperature of 103° F. which should be maintained throughout the procedure. The area of injection should be

thoroughly sterilized before the operation and no dressing used afterwards. Stress is laid upon the avoidance of infiltration of the surrounding tissues, otherwise sloughing may occur.

After each five injections two weeks should intervene before the second series of five, and this should be continued for two or three months after tubercular manifestations have disappeared.

The author of this method of treatment cautiously states that within the last five months six patients so treated for phthisis have been dismissed as apparently cured, but that they will be kept under observation for the purpose of further study.

This issue will stand for many a day as one of the most complete expositions of rheumatism ever presented to the medical profession. The eminence of the contributors cannot fail to be noted and it is doubtful if any one number of any English or American medical journal ever contained contributions by so many great men who are recognized as authorities on the subjects they discuss.

With so many remarkable papers, it is manifestly impossible to refer to any one especially. We believe each and every one will be read with the greatest interest as well as profit.

To every one who has helped to make this exceptional issue possible, we wish to extend our sincere gratitude. Infinite effort has been required but all will feel amply repaid if, as there is every reason to anticipate, the etiology of rheumatism is made less obscure, its treatment is made more effective, and most important of all, the possibility of preventing the disease and its complications by promptly recognizing and removing foci of infection, is driven home. If any message is conveyed to the profession by this great number it is that early and appropriate treatment will save many a heart, in childhood particularly, from the damage that means a life of invalidism and early death.

In closing this statement we have one deep regret. Two days too late to include in this issue we received Dr. P. W. Nathan's paper on "The Mechanical Treatment of Deforming Arthritis." Dr. Nathan's splendid work has received widespread recognition all over the country and his paper is a noteworthy presentation of the subject. We are sorry beyond words that all the forms were closed and on the press when his manuscript reached us. On behalf of our readers we shall try to get Dr. Nathan to let us print his admirable paper next month.



MEN AND THINGS

Charles E. Woodruff.—The death of Dr. Woodruff on June 13, 1915, will come as a personal loss to every one of the thousands of readers of *AMERICAN MEDICINE*. For ten years he has been a member of our editorial staff and for the past year and a half he has held the position of Associate Editor. Genial, urbane and possessed of a personality that endeared him to every one with whom he came in contact, his passing has left a place in the organization of this journal that can never be filled as he filled it. Sad and sorrowful his death leaves us, who had learned to look for his coming from day to day with the atmosphere of optimism and good cheer that he brought with him. No one could spend any time with Colonel Woodruff and not gain a broader, happier view of life.

For several years Colonel Woodruff had known that his physical condition was not satisfactory. His first sojourn in the Philippines although productive of so much of the valuable data that enabled him to elucidate and amplify his views on the influence of tropical living on white men, broke down his splendid physique and left conditions from which he never fully recovered. He regained a large measure of his health, however, following his return to this country and looked forward to a complete recovery. Then like a "bolt from the blue" came the order to return to the Philippines. Recognizing that this was little less than a death sentence, Colonel Woodruff met the situation bravely and, good soldier as he was, obeyed orders. Some day the discrimination which led to Colonel Woodruff being sent to the Philippines, when younger men who were logically due to go were allowed to hold the easy attractive assignments in Washington, will become known. Happily the favoritism and discrimination of a few years back have disappeared and conditions in the Army Medical Department

are no longer open to criticism and reproach.

No good end will be served by referring further to the conditions that were responsible for sending Dr. Woodruff back to the Philippines; suffice it to say that it was a dastardly, criminal sacrifice of one of the most capable and useful men in the Army Medical Service, for in two years he was invalidated home, a broken man physically, with death lurking near forever after. Not long following his return retirement became necessary—and the nation was robbed of many years of active service of one of the greatest sanitarians of the world. Again bureaucracy had demonstrated its capacity for depriving the people of their most valuable servants.

Colonel Woodruff was 55 years old at the time of his death. He was born in Philadelphia, the son of the late David S. and Mary J. Remster Woodruff. From 1886 until 1887, three years after he left Annapolis, Colonel Woodruff was a surgeon in the navy. In the latter year he resigned from the navy, and immediately accepted a commission in the Medical Corps of the army from which he was retired on his own request a little over a year ago.

Lack of space will prevent us from paying the tribute to Colonel Woodruff that his eminence as a sanitarian, scientist and author would justify—and our regard and admiration would make a pleasurable duty. Two of his works, however, "*The Expansion of Races*" and "*Medical Ethnology*," call for special mention because of their scientific importance. In these two great contributions to science Colonel Woodruff discusses his views as to the influence of excessive exposure to sunlight, and various other ethnic problems. Without a doubt "*Expansion of Races*" is one of the most important books brought out since Darwin's "*Origin of Species*." It is a veritable treasure house of anthropological and ethnolog-



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From *American Medicine*.

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(Retired)

1860-1915

Physician—Philosopher—Patriot

A true physician, with the poise of a philosopher, and the broad humanitarianism of a man who loved his fellow men for the good he could see in every one. Earnest in his undertakings, strong in his convictions and sincere in his motives, Colonel Woodruff gloried in fighting for the advancement of truth and right, the refutation of error and false judgment. In spite of the vigor with which he fought for his principles he was always tolerant and considerate of the opinions of those who opposed him; no one was ever readier to admit that there are two sides to every question.

Memory, therefore, will always conjure Colonel Woodruff as the kindly courteous gentleman, forceful in expressing his views, yet ever open to argument and conviction.

Gentle as a child, sensitive as a woman, yet always radiating the strength and virility of the strong disciplined mind, his personality was one to inspire not only respect and admiration, but the deepest regard on the part of all who came to know him.

Cut off in his prime a martyr to duty—and a victim of the callousness of bureaucracy—had Colonel Woodruff considered himself more—and the obligations of his position less—he would doubtless be alive to-day.

The memories such a man leaves to those who knew and loved him form a legacy that time cannot tarnish nor the fleeting years depreciate. In mourning his loss let us thank God for a friendship that has left us so rich in its recollections.

H. E. L.

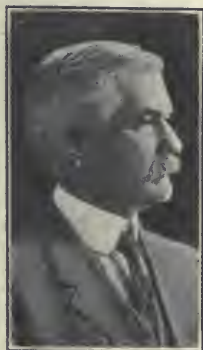
ical facts, and one of the most absorbingly interesting works in the English language.

Colonel Woodruff was indeed a wonderfully lucid and interesting writer. He was not given to floridity or the so-called "fine writing," but everything he wrote carried the charm of simplicity and clearness. As a writer in the *N. Y. Times* so well says:

"Colonel Woodruff certainly had something, and those who have most carefully studied his books on the effects of tropic light and the migrations of races assert that he had much of Darwin's power to give order and significance to great masses of facts, hitherto observed and known, but by others left uncoordinated and therefore comparatively worthless. His task was that of interpreting accumulated data, and he accomplished it in a way that made clear many a problem of mankind's movements and experiences that had either been wrongly solved or dismissed as insoluble."

In closing these all too inadequate remarks our hearts are full and our eyes dim with tears. Our colleague, companion and well beloved friend is dead. His desk is closed, his chair is empty. No more will his cheery presence brighten our days or his words of counsel and advice help to solve our problems as they arise. Old friend, we miss you, we miss you!

Gorgas' New Job.—Surgeon-General Gorgas, recipient of the AMERICAN MEDICINE gold medal in 1914 and co-builder of



(with all due respect to Colonel Goethals) has entered upon a new undertaking. As Director of the International Health Commission recently established under the auspices and financial backing of the Rockefeller Foundation, Doctor Gorgas will have an opportunity to benefit humanity to an even greater degree than heretofore.

The immensity of the task to which the Commission has set itself is greater by far than that of making the Isthmus of

Panama first a habitable and later a healthy place.

We naturally regret that the plenary powers entrusted to this great sanitarian by the exercise of which he revolutionized sanitation in Panama, cannot be available in his new task. In addition to the information, initiative and determination which he has already used to such benefit to the United States of America, he will be called on to exert a much more considerable degree of discretion, for he must now replace the authority of an autocrat with the persuasion of a diplomat, since he will now have to convince people who cannot be commanded.

We do not doubt that in his broader and more difficult field, General Gorgas will succeed, and that the world will be the better for his service in his new capacity. May his labors continue to be crowned with success will be the earnest wish of his multitude of friends and admirers.

The "Veneer of Civilization" and the Frank Case.

—Countless good American citizens have loudly expressed their wonder that war between civilized nations, with all its horrors and frightfulness could possibly occur in this Year of Our Lord, 1915. It has passed their comprehension that the people, enlightened and full of the spirit of brotherly love could tolerate the fearful conflict, the awful scenes of carnage, and the complete surrender to the lust for killing and destruction. How can mankind so forget the nobler, higher instincts of humanity as to gloat in the killing, maiming and suffocating of thousands, tens of thousands of human beings, even though counted as enemies? And with smug self esteem many of these good Americans have thanked God "that we in this country are imbued with more of the true spirit of Christianity." How little many of these good people are aware of the fires that smolder in the breasts of their fellow citizens! How little they know of the animal that lies dormant in the innermost selves of countless men, outwardly kind and gentle! A touch, and lo, civilized men become savages, and those who a day before were prating of their humanity are changed into raving beasts, with all the cruelty and blood lust

of the wolf or tiger. To those who do not realize how shallow is the "veneer of civilization" we would call their attention to the spectacle that the populace of one of our leading southern states has been presenting to the world for some time past. It is not necessary to go into detail concerning the case of Leo Frank. Suffice it to say that here was a man convicted of a most atrocious crime, who nevertheless was believed by thousands of intelligent people, both in and out of Georgia, to be a victim of circumstances and absolutely innocent of the charge laid at his door. The most careful and disinterested analysis of the evidence against him has convinced many of the brightest jurists and students of crime throughout the country that his principal accuser—a lewd, disreputable negro with a criminal record—was the real perpetrator of the crime, and not the convicted man at all. It is not our intention to consider the guilt or innocence of Frank, or to refer in any detail to the salient features of the case. The essential detail which we wish to emphasize is that the accused man was convicted on circumstantial evidence exclusively, under conditions which denied him the fair, considerate trial to which he was entitled. These conditions—the horror of the public mind at the nature of the crime, the prejudice of the people aroused by the fact that Frank was a Jew and reported to be guilty of degenerate habits, and the atmosphere created by the local newspapers and the police who seemed intent on fastening the crime on Frank by every possible means—all helped to make the conviction of this hapless man a foregone certainty, no matter how flimsy the actual evidence against him, or how open to reasonable doubt.

After conviction, however, sober, fair minded people began to look at the evidence with clearer minds. The earnest protestations of innocence made by the convicted man in the face of despair set many to thinking. And then soon like a great tidal wave, the sentiment grew rapidly that the element of doubt was present to a surprising degree in this man's case. He might be guilty, to be sure, but there was too great a possibility that he might be innocent to allow him to go to his death without greater certainty of his guilt. This was

the reason for protests made all over the country against Frank's execution. Thousands upon thousands believed him innocent, but the basis of the pleas for clemency was *the possibility that he might not be guilty*. No matter how fixed opinions a person might hold as to Frank being the murderer, it is incomprehensible that he or she could deny the *possibility* of his innocence.

In spite of all this and the many intelligent, thoughtful people who not only doubted Frank's guilt but firmly believed in his innocence—the trial judge who heard every word of evidence, even being willing to admit that he was not convinced of the prisoner's guilt—the people of Georgia—it is hard to say what proportion—have shown a blood thirst that has shocked the rest of the country. Indeed, many who believe Frank guilty have demonstrated a narrowness and a blind desire for vengeance that are beyond conception. The prosecutor whose attitude from the first has been more nearly that of a persecutor, has shown a vindictiveness that few men would care to father. No one can read his address to the jury at the original trial and his subsequent pleadings without noting a relentless, merciless prejudice against Frank that is unparalleled in the history of criminal prosecution.

The culmination of the whole affair was reached when Governor Slaton after an exhaustive hearing and a critical review of all the evidence recognized the presence of a doubt of Frank's guilt, and in accordance with the power vested in him, commuted the prisoner's punishment to a life sentence. If ever a man tried to do his duty and listen to the dictates of his conscience that man was Governor Slaton. Undoubtedly he saved his state from a fearful miscarriage of justice. But instead of being honored for meeting one of the most difficult obligations of his office in a conscientious, courageous manner, he was hooted, mobbed and subjected almost to serious injury.

When we consider the attitude of the Georgia mob, its cry for vengeance against a man whose guilt was open to doubt, the spectacle of an ex-governor of the state pleading for the execution of a man convicted on the testimony of a worthless, criminal negro, the frenzied attack on a governor who did what he felt was right,

and all the other evidences of intolerance, bigotry, blind prejudice and the unleashing of the vicious unbridled passions of the masses, we will hardly care to ascribe greater humanity, kindness and enlightenment to the people of this land than to those of any other. Human nature is pretty much the same in Georgia or New York as it is in Germany, France, England or Russia.

If the occasion arises and the essential conditions present, "our good American citizens" will throw off their personal restraint and disclose the brute spirit as quickly as any other people. The fact is we have become neither as spiritual nor as civilized as we would like to believe. Civilization in many respects has made genuine progress, but the average human being is still a good deal of a savage with more of the selfishness, cruelty and primitive passions of the earlier days than most of us realize. It takes some such event as the attack on Governor Slaton, or the wolf-like clamor for Frank's death to curb our vaunted claims of humanitarianism and spiritual growth. At any rate, as long as so many of our good American citizens are unable to control their passion for vengeance and are only to be appeased by the death of the object of their wrath, let us not be too ready to pass judgment on our warring friends abroad. Before condemning them or criticising them in any way let us consider the ease with which our own people—good American citizens—can throw off their veneer of civilization and lapse into savagery.

The psychology of these questions cannot fail to interest medical men, for better than any other class they realize the real nature of mankind. This is why physicians with all their charity for the short-comings of the people never accept claims of personal virtue and goodness—except—"*cum grano salis*."

The Frank case has been one of absorbing interest to medical men because of the many psychologic problems involved. The wonderful poise and courage of the convicted man, the character of the principal witness against him, the study of the notes written by Conley and their significance, the various medico-legal questions as to the one or two drops of blood found on the factory floor, the strand of hair found on a lathe, the condition of the body of the murdered girl,

the wound on her head and many other details, have all furnished material of the greatest possible interest to the psychologist and student of criminology.

In late years physicians have given much thought to such matters, finding that their investigation and analysis not only offer a most absorbing field of study but also assure a training of the mind that often proves of far reaching value in developing the powers of observation and deduction. Never was there a case that gave such opportunities for shrewd deductive reasoning. In the face of the evidence it is almost unbelievable that Frank could have been convicted. Nevertheless he was, and because we lay claim to no infallibility of judgment, we are willing to admit that those who believe Frank guilty may be right. We may be wrong in feeling convinced that he is innocent. But no matter what we believe or anybody else believes the one outstanding fact is that in spite of his conviction *Frank may not be guilty*. Therefore, when every legal procedure was exhausted it seemed that the presence of a doubt, a reasonable doubt, made commutation absolutely necessary. That even those who believed Frank guilty should oppose commutation is a sad commentary on the quality of Georgia mercy and humanity.

In justice to countless Georgia citizens it must be said that the thoughtful classes took the humane view that commutation was demanded by the circumstances. Fortunate indeed was Georgia that its chief executive was a man of large calibre. True to his manhood and with the courage to do the right as he conceived it, Governor Slaton commuted Frank's sentence to life imprisonment. Although he had to suffer abuse and indignities unique in the history of his own or any other state, he will live to see his action vindicated. At any rate he has saved the honor of his state and its people. A man who could meet his duty as Governor Slaton did in the face of the danger that threatened him, deserves much from people who know the value of moral courage in their public men. The nation should keep Governor Slaton in view. Men of his moral stature are needed in the highest places.

In leaving the subject, let us express the hope that the immediate future will lead to the discovery of new evidence that will enable Frank to clear himself and emphasize the danger of putting to death a man con-

cerning whose guilt there is the slightest doubt.

The Becker case is different from that of Frank and yet here is another instance in which there are grounds for doubting the convicted man's guilt. To be sure Becker has had two trials at both of which he has been convicted. There is no question of the fairness of his trials and the man who prosecuted him was a big man, mentally and morally, who was not dominated by any personal animus and would have felt himself untrue to his trust to have allowed any vindictiveness to have any place in his prosecution of the case against the accused. But the character of the men whose evidence convicted Becker and the interest each had in making him the culprit have raised doubt in the minds of many thoughtful people as to the moral right of the state to send this man to his death under such conditions. Governor Whitman is in a most difficult position, but he is a man whose moral sense is very high and whose conscience can be relied upon to lead him aright. It is an awful thing to think of, to have the power of clemency and yet allow a man to be executed who when it is too late may be found to have been innocent. To commute Becker's sentence to life imprisonment will not defeat the ends of justice but as in the case of Frank may save an awful mistake. The world we live in cannot be endangered by letting this man live, while on the other hand, all life and living may be enriched by a fine act of mercy. Lucky is the State of New York that its honor is in the keeping of a man as strong and fearless as Governor Whitman.

Old Remedies for Rheumatism and Gout.—Our conceptions of rheumatism have greatly altered, perforce, but it is interesting to note that those concerning gout have changed very little since the time of Sydenham. Therapy has become more accurate although it cannot be said to be a very exact science even now. The early Greeks knew a good deal concerning drugs and their administration, and the Arabs more, but the practice of medicine even in progressive England way up to the 17th century could claim little from a scientific

standpoint. Evidence of this is well shown by a book written in 1693 by the Hon. Robert Boyle, in which although one of the most brilliant and versatile geniuses England ever produced, a marvelous inventor and in scientific attainments far beyond his time, he displayed an ignorance of drugs and their uses almost incomprehensible in such a man.

For instance, here is a remedy recommended by him for rheumatism:

"For weakness in the hands arising from the palsy, or an ill cured rheumatism. Take the tops of rosemary and bruising them a little, make them into a ball of the bigness of a small orange or a large walnut with the green husk on. Let the patient often roll one of these balls between his hands and for divers hours in the day grasp one of them in the hand affected that it may grow hot there and transmit its effluvia into the part. Continue this course so long as the distemper requires."

Again, a successful remedy for a kind of rheumatism and a contracture of the limbs that followed it:

"Take the inward bark, that which grows next the wood of an elder tree; cut or tear it into small bits, and with them loosely placed fill about a third of a bottle. Then pour in as much small ale as will fill up the the remaining part of the vessel, stop it well till the liquor be strong of the infusion, and of this let the patient drink a good draught once or twice a day, or if he can well bear it, let him use it as a diet drink."

"A special remedy to take off arthritic or gout pains: Take good spirit of sal ammoniacus and with a feather dipped in it moisten gently all the parts, or parts affected."

Dr. Wilson who lived in the early part of the eighteenth century wrote a treatise on gout and rheumatism chiefly with the view of exploiting a nostrum of his own, probably containing vinum colchici.

Dr. John Haygarth who was one of the best known physicians of his period 1730 to 1770 or thereabouts wrote a treatise on acute rheumatism giving the results as well of his clinical experience. He had this to say concerning the therapeutic treatment of the disease:

"The remedies usually employed in acute rheumatism are bleeding by the lancet or leeches, blisters, antimony, sudorifics,

saline medicines and the warm bath."

The principal purpose of this publication he goes on to say, is to recommend the Peruvian bark in preference to all other remedies. Haygarth regarded the bark as almost a specific in rheumatism.

Dr. T. Fowler, of York, wrote in 1795 that he employed blood letting, sudorifics, and blistering in the treatment or rather as he termed it, in the cure of acute and chronic rheumatism.

Now harking back somewhat we come to an outstanding figure in British medicine, in fact in world medicine, Thomas Sydenham, who was born in 1624. Sydenham had little to say regarding rheumatism but his treatise on gout is a classic and will live as long as the world lasts. Indeed our knowledge of gout has not advanced much since he gave his brilliant exposition of that disease. In the course of his treatise he said:

"For humble individuals like myself there is one poor comfort, which in this, viz., that gout unlike any other disease, kills more rich men than poor, more wise than simple, great kings, emperors, generals, admirals and philosophers have all died of gout. Hereby nature shows her impartiality since those that she favors in one way she afflicts in another, a mixture of good and evil preeminently adapted to our frail mortality.

He further makes these profound remarks:

"In gout but three methods have been proposed for the ejection of the *causa continens*, bleeding, purging, sweating. Now none of these succeed. Whatever, therefore, helps nature in the discharge of her functions, either by comforting the stomach, so that it shall rightly digest its aliments, or by strengthening the blood to the due assimilation of the chyle brought to it, or by restoring the solid parts in such a manner as to fit them for the conversion of the juices destined for their growth and increase into their own proper substance, are properly called digestives. So also is whatever preserved, the different organs of excretion and the various emunctories of the body in their proper status, whereby in due time the recrements are voided in their due order. I say that whatever fulfils these intentions whether medicine, diet or exercise,

or change in the non-neutrals, is a digestive. Medicines of the kind in question are to speak generally medicines which are moderately warm and which when tasted act pungently on the tongue. Some of them amongst many, are the roots of angelica, elecampane, wormwood leaves, the lesser century, germander and ground pine. To these may be added the so-called antiscorbutics, as horseradish, garden scurvy, watercress. These last, however, though warming to the stomach and auxiliary to digestion, from their activity and pungency, act as incentives to the disease. Hence they must be used more sparingly than the others."

Sydenham believed in a mixture of many herbs as the following prescription will show:

"Root of angelica of sweet flag, of marshroot of elecampane. Leaves of mugwort, lesser century, white horehound, germander, ground pine, scordium, calamint, feverfew, meadow-saxifrage, St. John's wort, goldenrod, wild thyme, mint, sage, rue, Carduus Benedictus, penny-royal, southernwood. Flowers of chamomile, tansy, lily of the valley, English saffron, seed of penny-cress, garden scurvy grass, caraways, Juniper berries ā.ā. O.Q.S. Collect the herbs, flowers and roots at the seasons most favorable for their respective virtues. Dry and keep in paper bags until the fall, rub into fine powder. Take six ounces of each. Mix and make up with a sufficient quantity of the best clarified honey and canary wine. Make into an electuary of the due consistence-*secundum artem*. Two drachms to be taken night and morning."

Sydenham was of the opinion that of common medicines, Venice treacle was the best. Venice treacle contained spices and opium. Of simple medicines Peruvian bark was the best. One is sorely tempted to quote further from Sydenham's delightful and wonderful treatise, but space is lacking. He recognized that gout was a disease of 'indigestion or the impaired concoctions of matters both in the parts and juices of the body,' that is of disordered metabolism and of faulty excretion. His therapeutic remedies were archaic but, at least, could do little or no harm and nothing can detract from his fame as the man who correctly diagnosed the cause of gout."



INTRODUCTORY

RHEUMATISM AND THE RHEUMATIC DIATHESIS.

Of the many diseases which have served a popular demand for recognition none has probably been more misapplied than the term rheumatism. The fact that no patent remedy is a safe venture unless it includes the promise of some relief in this direction but emphasizes the universal misconception of the nomenclature. Nor is this confined to the laity alone. It is so easy for the physician to use the word rheumatism and so easily comprehended by the patient that the word has been much abused and sadly overworked.

In the past rheumatism has been an indefinite something induced by cold and exposure, always affecting either muscle or joint and with pain on motion as a prominent symptom. As a bacterial cause became suspected the throat was accused of being the port of entry and the tonsil assumed a new menace. Chorea in children, growing pains and other vague phenomena, including parental transmission, followed naturally in line.

Many authors have endeavored to classify the disease but until its broader significance was recognized and established no material progress was made. A systemic infection was recognized but when the diplococcus rheumaticus was supposed to be present, it was many times inadvertently absent in fluid and tissues acutely inflamed, a condition strangely at variance with many other types of infection where the cause could be demonstrated either by stain or culture. It was then recognized that the toxins of infection were capable of destructive inflammatory changes as well as the bacteria themselves and the broader field of toxemia was assumed. With toxemia as a base many unexplored fields were opened for investigation with the result that a truer picture of the old so-called rheumatic conception was obtained.

In considering any type of joint infection we must primarily consider the structure of the part—the subjective symptoms

of pain, limited motion, and inflammation with subsequent adhesions or ankylosis—in soft structures the involvement of muscular infiltration and degeneration. There seems a strange correlation in the rheumatic and so-called rheumatoid group in that synovial and serous tissue are particularly vulnerable—irrespective of location—endocardium suffers as well as joint structure.

With the progress in study we are hearing less of rheumatism and more of joint infection. Probably the fairest conception of rheumatism today is an acute disease accompanied by temperature, localized pain and inflammation about the joints, with invariable heart complications, either as an endocardial or myocardial syndrome. Mitral lesions have become classical examples of the infection leaving their mark for the growing adult to later discover as the unrecognized seriousness of true rheumatic injury in the atypical attacks of childhood.

There seemed to be a discrepancy, however, in apparently similar cases in different individuals. Aside from the usual cardiac complications most joints of true rheumatism recovered a full measure of usefulness, and later showed but little effect of the disease. On the other hand the so-called rheumatoid group differed largely in its destructive changes particularly in joint mechanism. Joint infection whether by the gonococcus, diplococcus or any other form of invading organism or toxemia invariably produces a true inflammation, viz.: an irritating form of productive inflammation.

A productive inflammatory change in any synovial structure about a joint means adhesion, and not only loss of motion but by this very loss of motion atrophy of the muscular structures essential to joint movement. The atrophy may be moderate or severe—the nearer ankylosis is maintained the greater the atrophy—this atrophy when general is often attributed to malnutrition, when as a matter of fact it is really due to the limited ability of the patient to exercise.

The rapid tearing of this adhesive ankylosis is often a misdirected effort at cure, with the invariable result that the new productive inflammation which follows leaves the joint bound up harder than ever.

In studying joint deformities which result from infections either chronic or recurrent, a radiograph impresses us with the apparent freedom from involvement of the bone proper. Joints which appear extremely

deformed are found to be anatomically complete, but the malformation consists in the loss of joint continuity due to loss of muscle balance, with the result that the stronger or less atrophied muscle, succeeds by its stronger power of contraction in dislodging the normal placement of the bones. The deformity is thus a true loss of anatomical placement and not new bony growth. When the periosteum is involved the productive change (Bruce's nodes) is quite evident though rarely sufficient to embarrass joint motion. The limited shadow thrown by old cases of disarticulated small joints have a reasonable claim to pathological change in the decided loss of blood supply caused by the adjacent connective tissue changes.

Much has been said and written in relation to the body metabolism as a factor in this group of cases. Uric acid played an enviable rôle until it was found to be an end product instead of the much advertised cause—a poorly consumed ash.

Metabolism is still much in evidence and if taken as a weakening of the defensive forces against body invasion is a very important element. In mentioning metabolism we enter quite naturally the newer field of the part played by the ductless glands. In the very crude methods at our disposal, we are at present poorly equipped to measure what constitutes perfect metabolism, except the best possible guide in the world—perfect health.

Variations and apparent deficiencies in metabolism have suggested the unknown possibilities which a study of the ductless glands might supply. There have been no accurate methods of supplying the secretion of the offending gland, granting it was offending and no method of isolating one or more of this group as the offenders, and if with Sajous we accept the hormone theory and activate one gland by the desiccated product of another we are at least for the present working on an empirical basis, and there is most danger in the glandular therapy being discarded from ignorance and improper use and the inclusion of a dosage of mixed glands when the deficiency actually required is unable to be diagnosed.

As a rule any acute disturbance in the ductless system is promptly productive of symptoms peculiar to the gland involved. The cretins and exophthalmic goitres are no longer mysteries. The pancreas is well known as is its possibilities of rejuvenation.

The adrenals are likewise an entity in Addison's disease; the pituitary as being the master link in the whole chain. But after all what do we actually know of the living, activating, correlating function of the system as a whole?

Probably results will be obtained when in selected cases we try the affects of separate and combined desiccated glands. This is far from satisfactory as the desiccated gland when taken by mouth runs the gauntlet of digestion which means consumption and absorption—a condition much at variance with a normal gland secretion—particularly when far removed from its normal need and environment. The blood stream as a port of entry offers the same objection, as it is not a welcome host to foreign invasion.

On the other hand the indirect exchange of secretion one gland with another, as a normal, internal activator, is extremely interesting if it can be accepted—not as a theory but as a fact which can be measured by diagnosis and dosage. At present this field is unfortunately covered by the too indefinite term "metabolism."

When we return to the field of medication we naturally first attempt the removal of cause. The types of joint involvement traceable to direct spread from foci, are discovered and relieved. And here a word of caution is necessary. The teeth have been offenders as centers of infection—and probably will be many times again, but the discovery of roots involved with pyorrhea need not mean the promiscuous extraction of many teeth. Emetine hydrochlorate may serve us better than the extraction. Shadows of teeth roots are to be viewed with consideration and care—a culture from the root if it is possible may be worth more than the picture. Shadows play tricks.

A patient with no teeth but artificial ones, is bound to show the effects sooner or later of poor mastication and malassimilation. Let us fix the old ones as long as they are at all useful rather than extract them with the hope of indirectly alleviating another condition. Cultures are more trustworthy than shadows.

Again the prostate has played the rôle of a disseminator of infection, sometimes with all the earmarks and proof of being fairly accused, but at the same time the prostate illy bears the shock of operative interference and should not be carelessly

injured. The frontal sinus and pelvis have likewise been attacked—possibly justly, but it might be wise to exhaust other suspicious areas before hastening into surgery.

If we center our attention on elimination, malnutrition and metabolism, as being natural precursors to the rheumatoid state; we find empirically at least that best results have been obtained by improving the body resistance through food and medication which have been least offensive to the individual afflicted, building up his protective mechanism and enabling him to better eliminate his toxins.

Proteids have been modified or eliminated from the diet. The lower gut has been given greater attention as reabsorption from this source presumably increased the local joint disturbances. In other words the patient might fight the local synovial disturbances but the added task of an obstipation or stasis with reabsorption deprived him of his final source of elimination—viz.: the gut. The value of relieving the body of intestinal toxemia has been proven by the use of the *Bulgarus bacillus*—an excellent restrainer of putrefactive changes, under certain conditions.

Most of the medicinal treatment thus far used namely salicylates, colchicum, bicarbonate of soda, glandular treatment and foreign drinking waters have apparently acted in one of three ways. *First*, as activators of secretion directly upon glands, or *secondly*, indirectly by the secretion of one gland acting upon another, or *thirdly*, as eliminators by catharsis. Salicylates are excellent cholagogues—if given in excess a severe grade of anemia results, due to the precipitation of pepsin in the stomach and occasionally the cure is worse than the disease.

The glandular therapy comes under the second heading. We are giving them at present empirically. The cathartic group have long been recognized and have made the foreign Spas famous. That free elimination is absolutely necessary seems clinically proven by the fact that colchicum our mainstay in certain forms of chronic suboxidation accomplishes little until a moderate catharsis is established. Patients always speak of the benefits derived but not until the intestines have been freely moved at frequent intervals.

A new item of interest has been added

to the study of foreign waters in the claim that they are radio-active and indirectly derive some of their benefit from this source. Time and further study will be needed to support this claim.

The salicylate group unfortunately have long stood in a position similar to quinine in malaria, viz.: a specific, and working on this theory the confusion in type of disease has frequently presented the query as to why it was not always successful. A fair reply is that rheumatism is a distinct entity, that indefinite joint pains have a deeper significance and require careful study to diagnose. That the diagnosis is primarily of the greatest significance and must not be hastily made.

Outside of medication and diet hydrotherapeutics and massage have offered the chance of greatest improvement in chronic toxic joint conditions. It cannot be too often impressed upon the profession that acutely inflamed joints need rest—that chronic recurrent adhesions mean frequent gentle massage and a restoration of function with as little atrophy of muscles as possible. Mild passive exercise is best conducted in the presence of heat either dry or wet. It is less painful and the peripheral dilatation enables an easier exit of detritus. Massage more fully carries out this process. Patience will work wonders. It is only natural that a sufferer should avoid pain, but given his natural inclination he will defer motion of any sort until ankylosis and atrophy have completed the picture of helplessness. The picture is often discouraging until we review a series of cases where the long painstaking care have secured a large measure of usefulness. Then the past is forgotten and the patient agrees that it was really worth while.

Another point to bear in mind is preventive medicine in childhood and early adolescence. If the port of entry, the tonsils are involved and atypical rheumatism in any form is diagnosed remember the selective affinity for endo, and myocardial tissue. Under the physical effort and strain of even moderate competition, the heart will invariably be injured, and the child develops a late cardiac—the price of negligence.

Suboxidation and true rheumatic types are poor athletic risks. Care for them *before* the damage is done, not *afterwards*.

ORRIN S. WIGHTMAN, A. B., M. D.



THE ARTHRITIC DIATHESIS—AN INTRODUCTION TO THE STUDY OF RHEUMATIC DISEASES.

BY

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I regard it as of fundamental importance in considering the nature and features of any disease, to pay careful attention to the personal and textural qualities of the particular individual concerned.

It will be my object in this contribution to apply this principle in the case of that large class of ailments which are now reckoned as dependent on the specific infection of rheumatism.

The doctrine of the Diatheses, or Habits of Body, is little regarded in these days. Sad to say, it is not now systematically taught in any school of medicine. The clinical laboratory and studies in bio-chemistry cannot supply, as yet, much of this knowledge, yet they may in the future help to certify, and throw more light upon what is already known, and predicated by clinical observation alone. In the meantime the out-patient room and the bedside are the main sources of this knowledge, and, no

less, to the trained eye, are the passers-by on any urban or country road.

We may sum up the matter concisely by regarding the individual, or the patient, as the *soil*, and the disease, in most instances, as the *seed* sown in it. We know well that certain soils favor the growth and development of certain seeds, while others are unfavorable for them. A favoring soil is one with specific proclivity to encourage development. If we apply this view to the human body, or soil, and find that certain microbic infections fail to induce the ordinary toxic sequels, we regard such an individual as immune, and his textures as inimical to their intrusion. Thus, the tissues of an ordinary person are rendered immune from variola and enteric fever by appropriate vaccination and inoculation. The soil is effectively altered in its tissue-life and metabolism, in these instances quite independently of the particular habit of body of the individual. A modification of the normal habit and proclivity has been achieved by these processes, certainly for a term of years.

We have now to recognize beyond these well-ascertained facts that there are varieties of constitutions in our common humanity. There is a personal equation for each individual which may never be ignored. How little indeed is this regarded in ordinary practice! Each patient is thus a special problem, and we have to ask as we

detect his malady, what does this morbid condition mean for him? How will he bear it? Is he a good or a bad subject for it? An inquiry into the personal and family history is essential for this determination; and a knowledge of family ailments and tendencies comes in here largely to help to form a worthy opinion on each point.

Knowing, as we do, how widely spread are the disorders produced by rheumatic infection, we have to note that numbers in all populations escape them, and therefore, we may regard many persons as practically immune from its agency. We are also well aware that pains and aches of all kinds are commonly and wrongly called "rheumatic" by all classes of most communities.

The modern view in respect of the Diatheses, or Habits of Body, comprehends not more than five of them, and are designated as 1.—*The Arthritic*; 2.—*The Scrofulous* or *Strumous*; 3.—*The Lymphatic*; 4.—*The Nervous*, and 5.—*The Biliou*s. These very terms may appear to some as simply suggestive of the effete medicine of the early eighteenth century; but, in my opinion, they are all clearly recognizable today in civilized society. (Many of our predecessors were keen and careful clinical observers even in the absence of the modern equipments of today).

We are here only concerned with the first of these, the "arthritic habit," or, as it is sometimes called, the "rheumatic habit of body," and I will proceed now to describe the main character and features of it.

The subjects of it present several peculiarities. In early years there is often no appearance of any marked weakness. The general development is satisfactory in the absence of any blending with other habits

of body, and we have often to deal with such blends, finding tokens of them in association. Some defects may be noted in the vascular system such as dilatation at an early age in the facial capillaries, with a languid circulation in the small vessels, leading to cold extremities, and a tendency to chilblains. Sometimes, we meet with patches of erythema or dry eczema. Pains in various joints and limbs, commonly regarded as "growing pains" (which should always receive attention) are to be noted. Sore throat with recurrent tonsillitis is especially frequent, and the tonsils are believed, with good reason, to be a site of lodgment of the specific germs of rheumatic infection.

Arthritis, more or less acute, is apt to occur in children, sometimes with pyrexia, or in other instances without any febrile movement. (It is very important to note this apyrexia, which is apt to mislead the diagnosis). The existence of this arthritic proclivity entails a special liability in the textures of the individual to receive and encourage the development of the specific toxin (due to a diplococcal microbe) of rheumatism. Up to the age of thirty-five there may be one or more attacks of rheumatic fever in such persons.

Other varieties of arthritis occur in these susceptible subjects from tender to advanced ages, dependent in many instances on toxic infections from without (exogenous), or from within, as in the case of gout (endogenous metabolic toxins).

In instances of chronic septicemia, there is a greater tendency in persons of this habit to suffer from arthritis than in others not similarly predisposed.

Many manifestations of true rheumatism are abarticular, and plainly declare them-

selves in various textures; hence we meet with varieties of erythema, purpura, and cutaneous nodules.

Carditis in all its forms, meningitis, cerebral and spinal, and chorea come into this category. In the case of chorea (cerebral rheumatism) we are in the presence of blended arthritic and nervous habits of body. As Cheadle pointed out, "the choreic child is commonly the nervous child in the family." The lymphatic and glandular systems appear to be singularly immune from rheumatic disturbances. So much so is the case that in any well marked young rheumatic subject, the occurrence of sensitive, irritable, or swollen glands should suggest a scrofulous strain blended with the rheumatic or arthritic proclivity. I was thus led some years ago to venture to suggest that this view might explain the occurrence of the disorder known as Still's disease, a variety of polyarthritis with lymphatic disturbances.

Some varieties of "rheumatoid" disease met with in early and later life are probably dependent on toxic influences specially determined to the joints of arthritic subjects. Thus, carious teeth, pyorrhea alveolaris, and chronic uterine disease may account for such cases.

In the third decade and after, under provoking conditions persons of this habit are liable to develop symptoms which plainly depend on the onset of gout, which is to be regarded as a branch of this basic diathesis. These symptoms may be regular and "classical," irregular, or, as Paget termed them, incomplete. Amongst these varieties, we have articular, abarticular, and visceral gout. In the abarticular forms we meet with myalgia, lumbago, sciatica, neuritis, fibrositis, phlebitis, hemicrania, and neural-

gia. Nodules may occur on tendinous sheaths, fascial contractions (Dupuytren) camptodactyly (of Landouzy) periodontal pains, and many other minor tokens of this disposition.

In delicate subjects of the gouty habit many varieties of visceral ailments may be noted. They often present examples of Heberden's nodes, which may, or may not, always contain urates; of obstinate patches of dry itching eczema, and sundry deep seated pains may occur in various bones of the spine and limbs, especially in the tarsus and condyles of the humerus. An inability to digest wine, malt, liquors, and richly cooked food is a prominent feature in many of these subjects. A tendency to epistaxis in youths of both sexes, and sometimes cyclical albuminuria may be suspected amongst early indications of the arthritic disposition. In young women, daughters of gouty fathers, severe epistaxis may be frequent, and associated (I know not if directly) with amenorrhea for many months. At the menopause such women sometimes suffer more than others from the vasomotor disturbances of flushings and sweatings. Varices and hemorrhoids are common in these cases, and there is a marked tendency to the formation of gall-stones, and to glycosuria of varying gravity, sometimes ending in true diabetes.

There is a tendency to obesity in arthritic families, and sometimes this may occur in a marked form in a single member of either sex in a family. In later life many of these subjects, especially if there be progressive gouty indications, prevent a high blood-pressure in their arteries with advancing sclerosis, and this is often associated with chronic interstitial nephritis. If these symptoms are unrecognized, they

may issue in cerebral hemorrhage, or provide ready victims for attacks of pneumonia. There is evidence in support of the opinion that some cases of congenital malformations of the heart are dependent on intra-uterine rheumatic disease, the mother being of a distinctly arthritic habit in such instances.

Gonococcal toxin appears to affect persons of a gouty arthritic predisposition much more gravely than others not so disposed, and is apt to lead to subsequent crippling of joints of a very persistent nature.

Exposure to lead impregnation also readily impresses its malign effects in such instances on the kidneys and arteries.

One of the most noteworthy features of arthritism is its resistance to the inroad of tuberculosis. This fact affords the strongest contrast to the extreme readiness with which persons of the strumous habit are thus infected. The bacilli of tubercle will not flourish in an arthritic soil. Should they lodge in the textures, their progress is arrested, and the lesions tend to indurate by cretification or fibrosis. The prognosis in such cases is therefore distinctly better than in most others. The resistance here is very remarkable. In most instances, we may suspect and find that there is a strain of struma present, e. g., a strumous mother or a gouty father, blended habits in the constitution. The gouty proclivity here is clearly an asset, and not seldom a saving grace. Severe attacks of hemoptysis may occur in such instances, with fresh outbreaks of tubercular lesions, yet there is always a tendency for these to be checked and to heal. The prognosis, at the worst, is always for chronicity in these cases, and the disorder may yield eventually in virtue of the gouty element. This fact, long ob-

served and taught in the French schools, has largely escaped observation elsewhere.

In cases where the parents are both of an arthritic habit, we may expect to find the evidence more marked in the offspring, and rheumatic tendencies to be accentuated. With a history of gout in the ancestry on both sides, we may meet with attacks of classical gout at an early age in the children, sometimes before the first decade is reached, and with uratic deposits.

It has been held that rheumatic fever and obvious rheumatic lesions are as much due to uric acid disturbances as is gout. I know of no facts to prove such a theory, and have no belief in it. The primary lesions of rheumatism are distinctly due to infection from without, and depend upon microbic intrusion and toxins (exogenous). In my opinion, the absolute uric acid theory of all truly gouty manifestations has been carried too far. None can doubt the presence and disturbing influence of uric acid, but it is at least probable that other vicious products of disordered metabolism (endogenous) have their part to play in these pathogenic and neurogenic processes, which still remain for further research from bio-chemistry.

A due regard to the diathetic proclivity of our patients throws a strong light on the maladies from which they are specifically prone to suffer, and richly repays the further care and trouble required to ascertain it. It is too often forgotten that the educated and thoughtful physician treats patients and not *diseases* and when we know the tendencies or proclivities of our patients, we can better treat them for their diseases. With this knowledge, which should be a carefully taught part of *clinical* medicine in all our schools, we come to

understand some of the puzzles of practice due to the blending and interaction of mixed diathetic tendencies which present themselves, and are naturally inevitable in all communities. The diatheses have been too long neglected as a part of medical training, and it is time to renew this study by the light of better methods than were available for our predecessors.

The Parisian and Lyons schools have done the best work on this subject, while the Edinburgh school has done most for it in Britain. The German Schools have treated it with absolute neglect, their progress being commonly attended by wiping out the past.

The American schools have now rich opportunities for this study, and I cannot doubt that they will in due time help to widen our knowledge of the whole subject.

Modern research has been so fully engaged with studying the *seed* that the *soil* has been ignored and forgotten.

The clinician must pay attention both to soil and seed, if he is to do his full duty to his patient.

I may add lastly that I have now lived long enough to follow many cases illustrating examples of the various diathetic proclivities, and to study the outcome in their descendants. The results have fully justified the opinions I have ventured to set forth in this contribution. The severe suffering and disablements depending on the outcome of arthritic proclivity should stir us to consider carefully how best to prevent, or limit, the natural tendencies inherent in this tendency. We may bear in mind that the majority of such subjects retain their health better in inland situations, and are commonly unfavorably affected by marine influences.

With Lanceraux, I am disposed to regard individuals presenting the characters, physiological and other, of the several morbid diatheses as persons almost of separate family races, specifically apart from others whose textures and metabolic processes appear to be normal, and void of special proclivities to definite morbid conditions.

We may believe that the arthritic habit of body is as widely spread in most communities as the strumous habit, and demands as careful study and consideration as is now so commonly devoted to the latter, and it is certain that an early recognition and appreciation of such tendencies may lead, with due care and precaution, to the prevention of many phases of morbid development in later life.

THE BACTERIOLOGY OF RHEUMATOID ARTHRITIS.

BY

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The generic term "rheumatoid arthritis" or "arthritis deformans" includes joint affections of widely different variety and origin, some frankly infective, such as gonorrheal arthritis, others which it would be difficult to associate with any form of infection. Some cases are definitely associated with previous acute infections, the acute mode of onset in some instances is suggestive of an infection, and the widespread enlargement of the lymph-glands and swelling of the spleen in the form in children described by Still lends weight to this view. "A number of the very best

students of the disease, as Bäumler of Freiburg, have accepted the infective theory of origin, which is gaining adherents, though it still lacks demonstration (Osler)."

How little, however, we know concerning the infective origin of this disease may be gauged when it is stated that it is not referred to in the second edition of Kolle and Wassermann's large work, "Handbuch der Pathogenen Mikroorganismen." The bacteriological investigation of rheumatoid arthritis may be said to start from the researches of Schullen who described a small bacillus.¹

A little later Blaxall² found in the synovial fluid of arthritic joints, and occasionally in the blood, a minute bacillus measuring $2\ \mu$ in length. It possessed marked polar staining, was decolorised by Gram's method, and could only be stained by prolonged immersion (3-5 days) in aniline-methylene blue. The organism was cultivated on agar, serum, and in broth. In a clear broth, after three days' incubation, minute shining yellow particles appear and increase in amount, giving rise on shaking the flesh to an appearance of "gold dust." Inoculation experiments on animals failed. The writer, who followed some of Blaxall's work, considers that it merits further attention and research.

In 1902, Poynton and Paine,³ who had previously found a diplococcus or short streptococcus in acute rheumatism, isolated a similar diplococcus from an osteo-arthritic joint, which produced arthritis, with osteo-arthritic changes, when injected intravenously into rabbits. Their work has been confirmed by Beattie and others. The organism is probably actually a short streptococcus, allied to the *streptococcus faecalis*, though it may appear in three

forms as either a micrococcus, a diplococcus, or a short streptococcus. These forms, according to Rosenow,⁴ who isolated it from several cases of acute rheumatism, articular and muscular, are easily convertible into one another. Warren Crowe⁵ has found present in the urine in a considerable proportion of cases of rheumatoid arthritis (in 14 out of 22 cases) a distinct variety of micrococcus which he terms *staphyloid coccus A*. It somewhat resembles the *staphylococcus albus* and the *micrococcus epidermidis albus*, but is distinct from these. The blood in several instances markedly agglutinated the organism and treatment with a vaccine prepared with it was markedly beneficial in many cases.

So far we have been dealing with a class of cases of rheumatoid arthritis in which micro-organisms are present either as a more or less generalised infection, or as a localised infection of the joints. There is, however, another class of cases of this disease which seems to be associated with a localised bacterial infection outside the arthritic system. We have here a condition of toxemia resulting from the local bacterial infection and manifesting itself, among other signs, by arthritic involvement and changes. Goadby⁶ has directed attention to a periarticular arthritis deformans commonly associated with mouth infections, but the extent of the disease in the alveolus of the jaws, or the quantity of pus, rarely bears direct relationship to the severity of the arthritis; in fact, the free discharge of pus, from the alveolar process often indicates a more complete autogenetic reaction to the infecting influences than the slow passive insidious rarefaction without copious discharge.

Periarticular arthritis deformans, may

commence as an acute or a chronic affection. The acute form is frequent in young adults, commonly women. The onset of the disease resembles and may be confounded with acute rheumatism and is followed by a slow and painful convalescence, with permanent thickening and impairment of several joints.

The chronic form is most insidious: one or more joints, or tendon sheaths in the region of the joints, become stiff and occasionally swollen, persistent pain in muscles and joints after violent exercise is frequent and gradually increasing disability supervenes. The pus from pyorrhea alveolaris always contains a number of bacteria, but in the rarefied bone Goadby finds five types of organisms (a) *Streptococci*, (b) *Streptobacillus malae*, (c) *Bacillus necrodentalis*, (d) *Micrococcus gingivae*, and (e) *Bacillus necrosis*. So far the streptobacillus group alone has produced arthritic changes on experimental inoculation into animals—in fourteen out of thirty-three animals inoculated. This organism also has given the best results with vaccine therapy.

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- ⁴*Jour. of Infectious Diseases*, Vol. 14, 1914, No. 1, p. 60.
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- ⁶*Trans. XVIIIth. Internat. Congress of Medicine*, London, 1913. Section XVII (Stomatology).

Thyroid Enlargement.—The thyroid gland is enlarged at times in infections in different organs of the body, noticeably in syphilis, scarlet fever, tonsillitis and tuberculosis. This does not mean that the enlargement is due to a specific organism, but may indicate that the increased activity of the gland is due to its effort to eliminate toxic materials.—*The Therapeutic Gazette*.

THE PREVENTION OF ACUTE RHEUMATISM.

BY

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In England we suffer greatly from the disease inadequately named rheumatic fever or acute rheumatism, a disease, which, for reasons that I have put forward with my colleague, Dr. Paine, in our recent work upon the subject, I look upon as due to a diplococcus belonging to the streptococcal family. Although this view makes comparatively slow headway, it has forwarded, I believe, the acceptance of the conception of the disease as the result of an infection, but the settlement of the last nature of this infection has necessarily passed from our hands for it awaits independent observations, which will either corroborate or amplify our results. A point of view has now been reached at which further insistence on our part can but be wearisome and tend to delay rather than further a conclusion favorable or otherwise to our opinion which must in course of time be arrived at by the medical profession. I shall not then delay with the dispute in this article, but content myself with the belief that the view that this disease is infective is one acceptable to the majority of physicians, for this will be sufficient for my particular purpose. It is an infective process which in some respects resembles tuberculosis, for in its more general manifestations it is essentially a disease of childhood and tends in adult life to limit its influences. It may be acute, subacute or chronic in course. There is a great tendency to exacerbations, and when once the human body is infected, it

is difficult indeed to ascertain when the infection is completely overcome. For the lungs in tuberculosis I would substitute the heart in rheumatism and for the joints and bones, the joints and muscles and for the abdominal organs, the brain. In so doing it may be added I seek only to imply a useful line of thought and not any strict comparison.

Can we suppose that lungs gravely damaged by tuberculosis could possibly recover their efficiency? We know it is impossible and that the best result will be organs permeated with scar tissue.

So with the heart in rheumatism, if the damage is severe a scarred heart must result, and in this sentence we express the truth that a great mass of chronic heart disease in adult life is the result of the irreparable scars of rheumatism. Until, then, we can convert scarred into normal tissue our treatment of these cases can never be more than palliative. This position is an unsatisfactory one and it is well worth our greatest efforts to endeavor to advance, however slowly, in a direction that holds out more hope.

Now when we consider rheumatism as an infection we ought, I feel sure, to keep a proper perspective. We must not think of it as we should of the infection of plague in a great epidemic; as a disease striking down all alike with hideous fatality. On the contrary we must remember that there is great natural resistance offered by the tissues, that the lesions vary in intensity and chronicity—and further that there are predisposing causes of great importance such as the climatic, hereditary tendencies, general surroundings, and seasons.

I have claimed acute rheumatism as a disease of childhood and its fatality is chiefly in early life. The following details will

support this statement.

From records at the Hospital for Sick Children, Great Ormond Street, I have collected with Dr. Agassiz, 250 fatal cases under twelve years. In addition, with Dr. Taylor, I have obtained 100 fatal cases over twelve years of age from University College Hospital in records extending over ten years. These latter numbers were however made up of cases of fatal rheumatic heart disease, including *scarred hearts*. These patients many of them died from *chronic* heart disease and not from acute rheumatism whereas the children died mainly from *acute* rheumatic heart disease, and not from *chronic morbus cordis*.

The percentage of fatal cases in childhood rose from 2.41 during the first three and a half years of life to 16% between 8½ and 9½ years.

In the cases over twelve years, 32% occurred between 12 and 20 years, that is before maturity.

Fifty-nine fatal *first* attacks were recorded in the 250 under twelve years of age. Only *three* in those over twelve and two of these were only 13 years old.

Between 12 - 20 years	14 died of acute carditis.
Between 20 - 30 years	3 died of acute carditis.
Between 30 - 40 years	1 died of acute carditis.
Between 40 - 50 years	1 died of acute carditis.
Between 50 - 60 years	1 died of acute carditis.

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20

None of these died in a *first* attack of *rheumatism*. In fact in the 100 cases over twelve, we obtained in 54 a history of acute rheumatism before *puberty*.

Lastly I give the number of cases over 12 years that died from heart scars.

Between 12 - 20 years	9
Between 20 - 30 years	9
Between 30 - 40 years	11
Between 40 - 50 years	15
Over 60 years	1
Between 50 - 60 years	7
Over 60 years	1

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53

The remaining 28 died of malignant endocarditis with the meaning of which I shall not deal in this article.

These statistics will convince everyone that acute rheumatism, if it is infective, is essentially a disease of early life; and further that if we wish to attack the problem of chronic rheumatic heart disease (heart scars) we must approach the problem in childhood.

That deaths occur in rheumatism from hyperpyrexia and severe chorea is undoubted but both events are so rare that they have no bearing upon the general question of the prevention of rheumatic heart disease. It is then to the prevention of acute rheumatism that I am attracted and a consideration of some of the salient points is the intention of this article.

I feel confident that the disease is much more frequent among the poorer classes than the well-to-do, and I would at once dismiss the view that diet has any further bearing upon its incidence than this; that any insufficient diet of whatever nature by lowering vitality will predispose to the infection. In this country there is a widespread belief that meat foods are highly injurious in acute rheumatism. For this, in childhood, I find not the slightest evidence in support; and strongly advocate when the illness permits of proper digestion, a liberal general diet suitable for a child of the particular age.

It would be unreasonable to suppose that in adult life, where frequently a very nitrogenous diet has been indulged in for years, the symptoms of acute rheumatism may not be modified by the unhealthy tissues that must result. Then I allow it may be wise to control the proteids with great caution, but in the children of the poor this occurrence is not probable and certainly the gen-

erous feeding of the invalid does not support any such view, for it is a valuable aid to recovery.

The importance of the fact that acute rheumatism is rife among the poor lies in the strong evidence it affords that the disease is largely preventable. Before, however, dealing with this more general statement, it will be well to consider the question of the sites of entrance of the infection. Those who have thought deeply about this question will realize how difficult this problem must be, more particularly if they accept the streptococcal nature of the infection. One site nevertheless rests upon good clinical and experimental facts and this is the tonsils. Most convincing examples have repeatedly come under my own observation, and without denying for one moment the possibility of other channels I am quite sure that unhealthy tonsils, and possibly tonsils with a peculiar anatomy, are responsible for admitting the infection into the system.

Here in my opinion we have opportunity for making real advance in the treatment of rheumatism. The tonsils need not be large, or exceedingly painful, and there is no one peculiar form of tonsillitis, but we repeatedly find that children subject to recurrent tonsillitis are at the times of these attacks liable to develop definite signs of rheumatism. For such cases enucleation is the rational operation for it is quite possible after tonsillotomy for unhealthy foci of disease to be pent up under the scarred stump of the amputated organ and where this occurs it is neither easy to detect them nor to persuade the patient to undergo further treatment. The enucleation of the stump of a tonsil is in addition not an easy undertaking. Nevertheless I think we must use judgment in this matter, for it is cer-

tain that complete enucleation is not a bar to further attacks of the disease as I have personally observed on more than one occasion. We cannot, I repeat, say that the tonsils alone admit the infection; keeping, then a just balance, I am convinced that there are many clear cases in which timely operation will rid the patient of a dangerous focus of infection and so far as human vision can see limit the future chances of grave infection.

Much has been written about the inadvisability of removing the tonsils but in my experience, which I may add is not a surgical one, I cannot find support for the contention. My investigations of these organs when they have been removed have led me to believe that though painting them and attacking them with gargles may be of some service, it is not possible by either means to attack the deeper foci of disease. Particular attention should be paid to tonsils with unusually patent crypts, some of which are veritable traps for the accumulation of unhealthy material.

Dental sepsis at all ages requires attention, and to operate upon the tonsils while the mouth is septic is admittedly bad practice. Nevertheless I cannot feel sure that the acute rheumatism is the result of dental sepsis, in the clear way that it follows tonsillitis.

Increasing care of the nasopharynx is then a step in the prevention of acute rheumatism and thus of chronic heart disease.

Turning now to the more general indications the next point is the fight against the popular ignorance about acute rheumatism. We have to realize that the medicine of the lay public is the aftermath of our own teachings. The irresponsible rich fly after the latest medical craze. The intelligent bulk of the population absorb the crystal-

lized doctrines of accepted medical opinion and the poor rely largely upon their experience of the sufferings of their friends.

For the irresponsible rich there is little hope, for they live always in the stage of experiment. The intelligent suffer because they often enough absorb views on medicine which have served their time, and have proved to be imperfect or fallacious. They become the victims of the fallibility of medical doctrines. The poor can be taught, for their experience based on the sufferings of their friends is very limited, and by slow degrees they can be convinced of this. Now rheumatism until quite recently was for the medical profession a disease of the joints, and it remains such for the intelligent layman. This belief will need upsetting. The evil name of uric acid also must be exculpated so far as acute rheumatism is concerned, an undertaking of no small magnitude. The poor can be instructed by suitable printed directions given to parents of rheumatic children at the various hospitals, or distributed at lectures upon child hygiene. The instruction can be made abundantly simple and very practical and the following are a few suggestions:

1. The great danger of rheumatism in childhood is the damage it does to the heart, not to the joints.

2. Though called acute rheumatism or "rheumatic fever" this disease often commences without severe illness, but with pains in the limbs frequently termed "growing pains" or with a stiff neck.

3. Children whose hearts are attacked by rheumatism need not have severe pain in the heart, slight breathlessness or palpitation may be the only symptoms.

4. A child who has rheumatism should always have the heart examined by a doctor.

5. Rheumatism runs strongly in families.

6. A sore throat may prove the commencement of an attack of rheumatism.

7. Chorea or St. Vitus's dance is generally rheumatic, nervousness, dropping things, headaches, and jerky movements are early signs of the illness.

8. Rheumatic children need warm clothing and good boots. The extremities should be protected.

9. Damp houses and rooms, wet clothes and damp neighborhoods are particularly injurious to the rheumatic.

10. Children with rheumatic heart disease need a long time for convalescence because the heart is softened by the disease and requires to get strong again before the child can run about in the usual manner.

11. Rheumatism often attacks children more than once. Late autumn and early spring are times of danger.

Such suggestions may seem puerile but the writer knows that they are practically of great value. Many mothers only want simple guidance, and however poor, they will do a great deal to defend their children from exposure to attacks. Doctors also with this particular class of patient require clear reasons for their care of the convalescents lest their motives be misunderstood.

In this country we are making a forward step in the supervision exercised by the medical officers of our council schools. The principal medical officer, Dr. Ker, has recently made an important advance by sketching out directions to this large body of workers for the more complete investigation of this disease during the school age. I look upon this as a notable event, for we want to know every detail of the behavior of rheumatism in early life.

Another point to which I would direct attention is the establishment of special convalescent homes for the rheumatic children including the choreic, homes where they can have plenty of time to recuperate. A nurse should be in charge who is well acquainted with the disease and not contemptuous of "little things." Such homes

should be equipped with means for "training" convalescent hearts.

It is a medical crime to keep a child with rheumatic heart disease in bed until tired of the case, and then rush it out of the hospital into ordinary life, and the solving of the riddle of a cardiac murmur though interesting is clearly not the end we aim at compassing. More care should be given to the directing of parents as to the future life of their children with rheumatic heart disease. It is a pitiful thing that a child with a considerable but nevertheless well compensated valvular lesion should be allowed from sheer ignorance to undertake the work of a road paver or market gardener. It is not to be supposed that the choice of employment is always possible, but it is certainly more often so than may seem obvious at first sight.

All teachers in large schools should have a rudimentary knowledge of the nature and manifestations of acute rheumatism in order to avoid as far they can, attempting impossibilities with choreic children and thereby delaying their treatment and recovery, or forcing through a routine drill a child suffering from an early carditis. Organization and perseverance must eventually enable doctors, teachers and nurses to know more of the constitutions of the poorer children during school life. If a country in six months can raise a voluntary force of a million armed men in years of peace they can certainly perfect an organization for the more thorough supervision of their rising generations.

The value of the school supervision is so great because it enables us to catch up cases which have eluded discovery but which as a rule have not advanced too far in the disease. Earlier in this paper I made comparison between rheumatism and tuber-

culosis and once more I would draw a parallel. When tuberculosis gets a sufficient hold on a patient there arises a time when a physician realizes that recovery is impossible, and the only question left is one of duration. It is so also with rheumatism. Children are repeatedly met with so damaged by rheumatism that the only question we ask ourselves is how long? Sometimes this damage is the result of one attack, but again it may not happen until a second or third attack has occurred, and if in the interval we can strike in and warn and supervise, we may win at least a partial success.

There is no satisfactory medical treatment of rheumatism in childhood. Doubtless I shall meet with the usual fate attending the maker of such a statement, but shall persist undaunted with the retort, that if the salicylates represent that treatment the medical profession is easily pleased.

The adolescent if a sufferer from rheumatism also requires guidance: parents should at this age pay great attention to persistent anemia. Holding the views that I do about malignant endocarditis I look with suspicion upon anemia, more particularly if this anemia is being aggravated by long hours in stuffy rooms, by improper feeding and lack of careful exercise.

I believe that an attack of rheumatism between 15 and 21 years of age under these circumstances is not at all unlikely to develop a malignant endocarditis.

The conditions of housing always raise a most difficult problem. The world being as it is at present, there will always be the rich and poor. If many of the rich could see that the chase for gold when they already have plenty, was a miserable pursuit, and many of the poor could see that a little effort and patience would not be out of

place, no doubt there would be some leveling up. Nevertheless there would still be the poor ones who as their reward get the worst food and the worst houses in the worst neighborhoods. To this extent there is hope for improvement, that with increasing morality it will be made more difficult for the greedy to construct jerry-built houses on unwholesome sites for the destruction of their poorer brethren. Seeing that we all commence this life alike as crying babies and end as useless clay—it should be possible to arrive at that stage of morality which gives a fair chance to the young. The injury of damp, ill-built dwellings is incontestable. I have seen children—several in a family—who have been changed from a dry to a damp house, break down within six months with severe cardiac rheumatism—and this to any lover of children is a great calamity.

In spite of all our attempts at prevention we cannot expect to get all cases in the first attack, and it is very unfortunate that primary cardiac rheumatism is not rare. By this I mean an attack which falls almost entirely upon the heart. A moment's consideration of the painlessness of valvular disease, and the ability of a child's heart to meet any slight disturbance, will make it apparent that such attacks may easily elude a parent's notice. Earlier in this article I mentioned that a nurse should not be contemptuous of "little things." It is "little things" that so often occur in childhood rheumatism, and in these cases of primary cardiac rheumatism, there is no doubt there occur more often than is suspected some warning muscular and arthritic pains. With increasing knowledge of the disease their importance will be more generally appreciated, and we shall meet with fewer examples of mysterious valvular disease. The lesion of which

this is particularly true is mitral stenosis, and this lesion is a most baffling one because it represents a peculiarly insidious form of the disease over which our powers of control are lamentably inadequate. Only continued study of this form of rheumatism can help us forward. Climate and seasons are mostly beyond our powers of control for the class with whom we have to deal, and so it must be that the prevention of rheumatism can only be a partial success. Even in this direction we can however see some light if we accept the view of infection.

The disease is most common in our large towns and when, after a long spell of dry weather, irritant dust begins to cause throat affections, we should be on guard for an exacerbation of rheumatism, if cold damp follow as it so often does in our climate. It is these abrupt and difficult changes in climate which I think makes inhabitants of this country so liable to this disease, and with the realization of this danger we can at least take precautions to prevent it by improvement in the general care of children.

How great and how far reaching the ultimate result may be for the prevention of rheumatism no one can foresee, but the attempt holds out nothing but promise for a group of patients for whom at present we do but little; and it promises also to strike a blow at the ravages of organic disease which may do real service to the country.

At the risk of being histrionic, I would beg our profession to spare some of their immense energy and great abilities from the study of the abstruse problems of immunity for pressing forward the prevention of acute rheumatism. The rheumatic children, humble though most of them may be, are among the most charming and pathetic of all our patients. The struggling mother with

mitral stenosis or the young father battling with heavy work and an aortic lesion deserve not only our respect and assistance but also our best efforts to prevent the continued repetition of such events from generation to generation.

THE RELATION OF DENTAL SEPSIS TO RHEUMATISM AND RHEUMATOID ARTHRITIS.

BY

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1. The Nature of Rheumatism and Rheumatoid Arthritis.

During the last 25 years we have watched bacteriology asserting its claims and establishing a new conception of disease. Gradually the mystery of origin is being dispelled, and with it much of the subdivision which clinicians had introduced. This will be found, I think particularly true of rheumatism and rheumatoid arthritis. For my part, when I have read the descriptions by two or three different authors, or even the same author, of "chronic rheumatism," "rheumatoid arthritis," "osteo-arthritis," "rheumatic gout," "chronic gout," and compared them, I am left wondering which is which and how any man distinguishes them, and my conclusion is that they are all of a kind. I turn to "acute gout" and again I can find no tangible distinction between an acute gouty arthritis and an acute arthritis of acknowledged septic origin. Then I turn to "rheumatic iritis," "gouty iritis," "rheumatic sore throat," "gouty throat," "gouty gums," "rheumatic gums." Nowadays we hardly hear of such diseases; they have been found to be of bacterial origin—very largely from dental sepsis. I find fibrositis

explained away by the term "rheumatic;" but the bacteriologist has demonstrated small foci of definite infection. "Rheumatic" fibrositis occurs in people who have been up to the moment of its occurrence looked upon as healthy, but again, bacteriologists have shown that the circulation of living germs in apparently healthy blood is no uncommon thing. The circulation of "toxins" may then be assumed. In fact most people are affected at some time or other and for longer or shorter periods by bacteremia and toxemia or both, small perhaps in degree but none the less capable of evil if chance be given. Hence trauma, injury by exposure to cold, exhaustion, starvation, over-eating (perhaps secondarily) may determine a definite illness. When the infection affects joints or muscles it is called rheumatism or gout or some variant according to the prejudices of the observer.

Micro-organisms have long been demonstrated in the fluid of joints affected by acute rheumatism and more lately in the heart lesions of both acute and chronic rheumatism. The point now is rather whether there is one specific organism of "acute rheumatism" or whether the same train of symptoms can be set up by a variety of organisms. Paine and Poynton claim that "acute rheumatism" is due to a specific diplococcus and have shown that the tonsil is a point of entry. Studying acute rheumatism we find the chronic form follows it, both in joints and heart, and we are back where we started among osteoarthritis,, rheumatoid arthritis *et hoc genus omne*, only we now see that they may all be of microbic origin.

2. If, now, merely the possibility of microbic origin be allowed the next step is to look for a point of infection. This

is supplied by any ulcerated or even inflamed surface. Of all parts of the body the mouth most frequently presents such surfaces, indeed there are few people whose mouths are free. This is at once understood when the prevalence of dental caries, tartar, and marginal gingivitis deepening to pyorrhea alveolaris is considered. Every dental abscess provides an ulcerated surface of carious bone; tartar both mechanically injures the adjacent gum surface and by entangling germs provides for its efficient inoculation, the gum and bone adjacent to tartar are of necessity either inflamed or actually ulcerated; marginal gingivitis, reckoning 32 teeth with an average circumference of 1 inch and a periodontal sulcus of 1-16th inch deep, gives 2 square inches of inflamed surface, while the onset of pocketing adds one ulcerating area of almost indefinite extent. These conditions arise from the natural disabilities of the mouth. To them must be added the artefact stagnation areas provided by unclean plates, ill-fitting crowns, uncleanable bridges, gold caps whose edges are thrust far under the gum margin where fitting and cleaning are equally impossible, rough and overlapping fittings, cement and gutta percha fillings inserted at and under the gum edge. The tissues adjacent to these artefact stagnation areas are permanently in a state of inflammation or ulceration.

The sum total of it all is that by reason on the one hand of nature's attack and on the other of man's defence there is scarcely a healthy mouth in the whole of the civilized world. This prevalence of dental sepsis follows inevitably on the adoption of soft, sticky, starchy and sugary food, it obtains at all ages of life so long as there are teeth in the mouth. It begins with the tender gum which follows on the first ap-

pearance of a temporary tooth, increases with increasing number of teeth and diminishes with their loss. Unless we are to reject all modern pathology it is a permanent source of infection.

3. We have now two factors—a prolific source of infection and a series of symptoms, or concrete diseases, varying from acute to chronic, both occurring practically throughout life. How far can they be fitted in as cause and effect?

We may look for an answer from bacteriology, clinical experience, and analogous diseases. So far as I know the most definite bacteriological work is that of Paine and Poynton. As already noted they have demonstrated in a large number of cases of acute joint rheumatism and both acute and chronic heart rheumatism, a pure culture of a diplococcus and have shown that the tonsil is a portal of entry. If tonsil, then ulcerated gums, for what reaches the tonsil must have had the mouth as its first point of lodgment. Beyond this I am unprepared at present to advance bacteriological proof. Clinical experience furnishes, to my mind, convincing proof of the causal relation of dental sepsis to all forms of rheumatism, rheumatic arthritis *et hoc genus omne*. In clinical work the fallacy of *post hoc propter hoc* is ever present. We need a large number and percentage of cures before we can eliminate for instance the medicative nature and give the credit to our treatment. We also want clear-cut cases where there is but one source of infection and one line of treatment. The following cases are quoted because they are of this nature:

Case 1. Child 9 years of age, suffering for some 5 months from subacute articular rheumatism following an acute onset. Persistent daily rise of temperature of 1° or 2°, valvular murmur. Had been treated

medicinally. When I saw her I found 8 carious temporary molars, kept because of their masticatory value. At least 4 were abscessed and the gums round all were spongy. No other source of infection could be found. After extraction of all the molars she made a perfect recovery with no other treatment except careful nursing. She is now a healthy child of 9 and the heart seems perfectly normal.

Case 2. A young medical man of 25 years, seen for acute toothache the day after an operation for appendicitis. He complained of early rheumatoid arthritis, especially of the shoulder-joints, which had forced him to give up all active athletic pursuits. I suggested this might be due to his appendicitis, or to a well-marked "pyorrhea alveolaris," from which I found him suffering. After 5 weeks convalescence his arthritis was no better, and I began treatment of his pyorrhea. Since there was no deep pocketing no teeth were extracted. He was treated entirely by local measures—sealing and minute dental cleanliness. No other source of infection could be found and no other treatment was adopted. He recovered rapidly and resumed his active habits and during the 10 years elapsed since first seen has remained well except for slight relapses which are always cured when the more minute cleaning of the dentist is substituted for his own.

Case 3. A man of 45 years, in good circumstances had suffered for 6 months from "chronic rheumatism" of one knee joint. He had been treated by baths, diet, ionisation, hot-air baths, etc., all to no purpose. He limped about with the aid of a stick. No source of infection had been found till it was noted that he had a large suppurating pocket round a molar tooth. This was treated by local measures and in a short time he was well and remained so till his death 5 months later. No other treatment was adopted.

Case 4. A man of 45 years, in good circumstances, complained of indigestion, recurrent "gout of the big-toe joint," a circumscribed bony swelling on the sternum, and a persistent slight rise of evening temperature. He was ticketed "gouty" and treated medicinally without effect. When I saw him he was suffering from advanced "pyorrhea alveolaris" and readily submitted to complete extraction of his teeth. He rapidly

lost his indigestion, gouty toe, and rise of temperature, the bone swelling seeming to remain stationary. No other treatment was adopted and no other source of infection was found. He remained well for 2 years when a recurrence of indigestion brought him to me again. I found his plates clean, but on examining his nasopharynx saw a mucopurulent discharge descending behind the soft palate. His nose was treated by a rhinologist and he has remained well during the 12 years that have elapsed since that time.

Case 5. A medical man, 55 years of age, complained of "muscular rheumatism," chronic and not very disabling. I found slightly deepened sulci round several teeth, several rough fillings and 2 defective gold caps. No other source of infection was found. I remedied the dental conditions and his "rheumatism" disappeared. No other treatment was adopted. He gets occasional recurrences but rapidly gets well when the extra dental cleanliness of the dental chair supplements his own.

Case 6. Lady, aged 50 years, suffering from a rather general "chronic rheumatoid arthritis" of years standing, supposed to be of a neurotic or peculiarly feminine origin. Her hips were affected and she walked with difficulty. She could not use her hands freely. Had been treated, medically, by baths, mud-baths, hot-air baths, etc., with no lasting result. When I saw her I found an advanced state of "pyorrhea alveolaris." I took out all her teeth and she began to improve at once. Improvement was progressive but slow and she has never made a perfect recovery. She is now, however, 4 years later, better than she has been since her illness began, can walk far better and use her hands freely. No other source of infection was found and no other treatment adopted.

These cases are quoted because they are clear-cut and because they cover pretty nearly all the ground included under rheumatism and the vague terms gout, rheumatoid arthritis, etc. They could be added to largely—sufficiently to satisfy the demand for enough cures to establish the causal effect to the means adopted and to eliminate the chances of error introduced by the *vis*

medicatrix naturae, other treatment, errors of diagnosis, etc., but space and time forbid.

Among sheep there is an excellent instance of analogous disease. The new-born lambs get sick and develop joint swellings. Some die, those that recover seldom recover perfectly. They present various forms of joint lesions—chronic fibrous swellings increasing in size, chronic bone nodes, or chronic fluid swellings, with muscular atrophy. I have examined many *intra vitam* but have not yet secured post mortem specimens. We found, by observation on one farm, that the lambs' navels were dirtily treated by the shepherd and that in all cases where joint swellings supervened, the navel was ulcerated. Cleanliness and less interference with nature at the next lambing season reduced the disease to the vanishing point.

In the human subject ophthalmology supplies another set of analogous diseases. In the eye almost the minutest pathological changes of inflammation, hemorrhage, thrombosis, etc., can be studied from their inception, thanks to the ophthalmoscopic transparent media. The result is that conditions which were looked on as rheumatic, gouty, idopathic such as iritis, cyclitis, *episcleritis*, retinal hemorrhages often of the minutest extent, choroiditis, etc., are now daily more regarded and treated as of infective origin, and the opinion is justified by the success of treatment. The assistance I am able to give in saving sight is one of the most pleasant factors of my daily practice.

Observations, both pathological and clinical, made during the last 15 years or more have led me, then, to conclude that rheumatism, rheumatoid arthritis, gout, etc., are for the most part microbic diseases; that the catarrhal and ulcerated surfaces of

the mouth are a frequent, if not the most frequent portal of entry; that the infection may be bacterial or toxic i. e., that there is bacteremia, toxemia, or both; that the possibility of dental infection is present so long as there are teeth in the mouth; that many other diseases, e. g., arteriosclerosis, chronic nephritis may be of toxic or bacterial origin due to dental infection; that the elimination of dental sepsis should form part of the routine treatment of all diseases and is one of the most important points in prevention.

Dental Treatment. Once a possible causal relationship has been established between the presence of teeth and disease of other organs it becomes obvious that the teeth are of lesser importance. A tooth for a tooth and an eye for an eye, as was laid down of old, but an eye for a tooth or a joint for a tooth or for all the teeth, is unthinkable. Teeth can be replaced or done without, but an eye or a joint!

In estimating the possibility of dental infection and the consequent need for dental treatment, the normal pale pink color of the gums, closely applied to the ends of the teeth with a periodontal sulcus which is potential rather than actual and of 1 or 2 m. m. in depth only, with interdental papillae receding between the contiguous teeth, not bulging from among them, and with a well marked health-line, must be borne in mind. Any inflammatory deviation from this is a sign of infection, that toxins or germs, or both are gaining entry. The inflammation is a protective reaction of the tissues against infection and it may be of any intensity from the most acute, running rapidly on to suppuration, to the most chronic, resulting in slow molecular destruction, in fibrosis and hypertrophy, or in bone sclerosis and hypertrophy. Thus we

get a most varied series of clinical pictures, which, however, seem to pass currently as normal or at least as of no moment. I shall only indicate here what I believe to be the most common conditions there neglected.

A condition of solid stagnation in which a pultaceous whitish mass can be squeezed out from under apparently healthy gum edges of both temporary and permanent teeth; a persistent subacute inflammation of the gums giving them a blue turbid appearance with gum edges not much swollen though readily bleeding and tender on brushing and accompanied by loss of the health-line; a persistent catarrhal condition involving a width of gum about 2 m. m. outlining each tooth, especially visible on the palate side, and by reason of desquamation of epithelium showing itself as a band of light pink round each tooth; a chronic catarrhal condition of the toothward side of the periodontal gum edge, accompanied generally by thin deposits of black tartar, especially on the interdental surfaces, leading to a slight epithelial hypertrophy, and consequent whitening of the gum edge, and accompanied by a slight formation of pus which may be demonstrated best by mopping out the periodontal sulcus with a fine wisp of cotton wool wrapped round a fine dental probe; a condition of slow destruction of the alveolar bone accompanied *pari passu* by shrinking of the gum; a condition of alveolar hypertrophy accompanied perhaps by thickening of the gum, but in which the overlying gum remains pink though often glazed and streaked by minute veins; a condition in which though the bony alveolus is slowly destroyed from its edge towards its base the gum yet remains at a high level closely applied to the tooth, thin, and pink; such teeth are commonly the subjects of recurrent attacks of acute periodontitis.

X-rays will frequently show that the bone round the apices of teeth that have been passed as sound has been destroyed and replaced by granulation tissue thus proving the presence of infection. I believe that attention to the state of the gums will enable us to predict the findings of the X-rays.

Next the actual condition of the teeth and of thin replacing apparatus needs gauging. Very little experience should be needed to enable the detection of rough or overlapping fillings, ill-fitting crowns or caps, uncleanable bridges, or unclean plates, but it may be laid down as axiomatic that every filling, edge or crown, or cap-joint which is hidden away under the gum is imperfect and so affords a stagnation area. The operator cannot be sure of work done in the dark. It needs more experience to detect the minute points of exit of some chronic discharging abscesses and much experience even to suspect a blind chronic abscess.

Dead teeth, i. e., pulpless teeth, must always remain suspect. If the nerves have been killed, extracted, and the root filled by a competent operator there is a fair guarantee of its internal asepticity, but the chances even of the most conscientious operator infecting a root-canal are considerable. Where the root has been septic before treatment I consider there is little likelihood of its ever being rendered sterile. It is almost impossible to follow the gums along the dentinal tubules so that though the root-canal be sterile, and filled with an antiseptic, there may yet be absorption into the surrounding tissues by way of the dentinal tubules and cementum. Again neither are roots always straight nor do root-canals always conform to the shape of the root. Recent Italian work has shown that root-

canals are very variable, branching and joining, again flattening and subdividing towards the apex into several minute canals which open separately in the apical region, instead of keeping a straight single course as our mechanical methods of sterilization demand. I have myself during the last 3 years examined a large number of teeth with the object of ascertaining the course and shape of the root-canal and can entirely confirm these observations. Unless then there be a possibility of sterilization by some absorbable and penetrating antiseptic we are left with the possibilities that every dead tooth which has once been septic is a possible source of infection. Clinical experience, unfortunately, supports this view, for I have seldom extracted such a tooth without finding more or less granulation tissue adherent to it, absorption of the root, or exostosis of the cementum—all signs of chronic periodontal irritation.

Next the condition of the patient must be considered. Wherever the source of infection may lie, resistance has obviously broken down but in a patient with a good reserve of health much more may be attempted in the way of conservative work than in a weakly individual. Eye cases, however, where as already noted the pathological processes are under more complete observation than anywhere else, show that even in apparently healthy persons minute sources of sepsis are capable of causing remote damage and I have been obliged to render a seemingly strong and young patient completely edentulous before obtaining permanent success in a case of cyclitis with secondary glaucoma. Here the residual source of infection was two lower canines which any dentist might have been excused for passing as healthy. The same point is brought out in the case of muscular

rheumatism by case 5. We may thus formulate a general rule of practice. Clean and render cleansable; thereafter whatever the patient cannot keep clean should be taken from him. The word "clean" indicates the treatment of pyorrhea alveolaris; dental caries, tartar, artefact stagnation areas, abscess or any abnormal condition favoring sepsis; "render cleansable" means that the patient must have ready access to every tooth surface that is not in organic union with the tissues round it, e. g., where teeth cannot be reached for cleansing by mechanical means (brush and silk) they must be extracted and every pyorrhea product must be destroyed by removal of gum and, if needed, bone, for there is no reunion of tooth to bone or gum once the original union has been destroyed.

Nature and Path of Infection. Concerning the nature of the infection I have only one point to urge—that more attention should be paid to the existence of decomposing debris among the teeth. A foul or a sour smell detected by mopping out the interdental spaces, periodontal sulci or portals should be regarded as a danger signal. It appears to me quite possible that a good deal of the injury caused by dental sepsis is due to absorption of the products of putrid decomposition. I suspect my point would be carried were the germs of this putrefaction identified and their products dignified by the name of "toxin." In any case putrid food can be no more healthful when swallowed from between the teeth than when eaten off a plate, and no examination for dental sepsis can be regarded as complete unless the presence or absence of "decomposition" has been determined. At the least it is a sign of possible stagnation and accumulation of harmful germs, and for my part I think it is harmful of itself.

Path of Infection. There has been some difference of opinion as to whether local absorption or swallowing is the more dangerous and frequent path of infection. If local absorption be the more dangerous, the extreme frequency of inflamed and ulcerated areas in the mouth gives it full scope for action; if swallowing be the greater danger similar provision for its full action is made. The important point is that the products of dental sepsis *must* either be absorbed locally or swallowed—no other path is open to them.

THE RELATION OF THE INTERNAL SECRETIONS TO RHEUMATISM AND THE RHEUMATIC DIATHESIS.

BY

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Rheumatism and the rheumatic diathesis are conditions concerning which there are numerous and widely differing views. The literature regarding the various phases of rheumatism is as extended as it is contradictory. The unsuspecting reader frequently is led into a morass of differing conceptions from which it is not always the easiest thing to extricate himself.

Some writers insist that "rheumatism," and by that they usually include the varying disorders which have been classed under this name, is a manifestation of digestive trouble pure and simple; correct the digestion and the rheumatism will be automatically taken care of.

Others insist that it is essentially the result of an imperfect mineral metabolism and assure the reader that recourse to certain

inorganic neutralizing measures will quickly bring conviction regarding the correctness of this view.

Still others assert that there is a bacterial origin, not only for the obviously infective forms of rheumatism, but for all of them; and that the successful treatment of this disorder is not complete without at least the addition of procedures based upon its "undoubted microbic origin."

Much has been written regarding the relation of uric acid to the rheumatic diathesis and opinions seem to be veering away from the statements so ably presented by Dr. Alexander Haig. In a recent communication (*Interstate Med. Jour.*, April, 1915) Goodman aptly remarks that: "The uric acid theory is at present tottering on its unstable foundations and we are growing more and more inclined to the view that not uric acid, but rather disturbances of intermediary purin metabolism, are at the root of the evil."

Looking at this problem from the standpoint of an average physician, it is altogether probable that there is an element of truth in all of the theories regarding rheumatism and that the statements which serve as a prelude to this article are all correct to a certain degree. None can deny that rheumatism in the majority of instances exhibits as one of its most constant manifestations a disturbance of metabolism, and considerable evidence is accruing to indicate that not a few of these cases have as the original basis of the trouble an obscure infective process which may never be so obvious as to direct attention to itself, but is only brought to light following the empiric use of stock vaccines given with the expectation that this unnoticed infection may be present. In such cases (and Sherman, of Detroit, has frequently directed atten-

tion to the importance of this class) the diagnosis is often made by the clinical results of the empirical treatment and it may be stated in unqualified terms that many of the chronic rheumatic affections are of bacterial origin, even though they may show none of the typical findings of obviously infective cases.

The manifestations of the rheumatic diathesis are too frequently associated with digestive disturbances for the consistent physician to deny the intimacy of this relation, and it is not an uncommon thing for dietetic regulation, with attention to the inevitable defective elimination resulting from disturbed digestive activity, to bring about a complete control of the rheumatic phenomena. Certain it is that the excessive amounts of proteid which are so commonly eaten combine with other factors to bring about the metabolic chaos which is so usually called rheumatism. Parenthetically, it might be remarked, these persons are not suffering from the results of mineral excess, although the laboratory evidence may seem to indicate this; rather they are undergoing their tortures because of a *lack* of the natural mineral elements—the vegetable alkalis—which the body needs, and which they could just as well have if their diet included more of such articles as potatoes, greens and cereals, and less meat.

Whether or no the initial cause is dietetic or bacterial in origin there can be no doubt that all forms of rheumatism are evidences of essential changes in the chemistry of the body and, this being granted, should not the regulators of metabolism be considered both in the etiology as well as in the treatment of the various forms of this disorder?

It should be quite unnecessary to lend emphasis to the importance of the glands of internal secretion as regulators of the

functions of the body. The hormones not only control, but correlate these various cell activities, and their work is so closely connected with the factors which are concerned in the reaction of the body to the causes of rheumatism, as well as to the attempts made to cure this condition, that the physician who considers the relation of the internal secretory glands and their hormones to rheumatism is more likely to solve some of its mysteries than the one who overlooks them entirely.

It is remarkable how close a relationship may be discovered between certain of the ductless glands and the symptoms which have come to be considered pathognomonic of rheumatism. Presuming for a moment that the various manifestations of the rheumatic diathesis are toxic in origin, is not detoxication essentially controlled by certain of the endocrinous glands?

If the infective origin of rheumatism is admitted to be the most frequent or important, then we must also admit that certain of these remarkable organs are responsible for the production of the protective measures which the body automatically brings into play in infections. Sir Almroth Wright himself insists that all the substances concerned in the control of infections must be considered as products of the internal secretory organs.

If functional digestive disturbances are the most common basis for this condition, then it is proper to consider the relation of the alimentary hormone, secretin, to this disease and, where digestive insufficiencies are manifestly present, recourse be had to the use of secretin as a remedy, for I am thoroughly convinced of its value as a physiologic means of stimulating lazy or inactive digestive glands. So whether rheumatic conditions are purely metabolic in

origin, or whether they are due to micro-organisms, or to indigestion, we must not belittle the fact that in any event there must be a rôle that the internal secretory organs play which favors their prevention as well as the cure.

Under the present circumstances it would be quite difficult to consider this from the protective or prophylactic standpoint. Rheumatism is too insidious a disease. Its onset is of such a nature that it is not appreciated until one or more of the more definite manifestations—joint pain, immobility, swelling, etc.,—brings the patient to his physician. We can, however, make good use of this information in the diagnosis and treatment of rheumatic conditions. For example, too often the orthodox treatment with salicylates or other neutralizing agents, does not give the desired degree of results, or merely tides the patient over whilst the disturbed chemical conditions are under the influence of the drugs or measures used. After a longer or shorter time the patient has a recurrence and unfortunately, too often it is more severe than the initial attack. In such cases the knowledge that the ductless glands may be frequently concerned in rheumatism will enable the physician to consider the case from a slightly different angle, one which I regret to say is rarely taken by the medical profession, and this new viewpoint may facilitate the control of future manifestations. It will also open up the possibilities of certain forms of organotherapy which, rightly applied, may materially influence the response of the organism to the other usual therapeutic procedures. Right here it should be emphasized that organotherapy is not recommended as the *sine qua non* in the treatment of rheumatic affections. Far be it from such, but as an important adjuvant and a phase

worthy of consideration it deserves considerably more attention than it has previously received, as may shortly appear.

Leopold Levi, of Paris, insists that the thyroid is quite intimately connected with both the cause and, in certain cases, the successful treatment of various joint conditions, not excluding the most serious form, arthritis deformans, and in the introduction to his recent book (*"La Petite Insuffisance Thyroïdienne et son Traitement"*) he makes the following statement: "Therapeutics is very helpful in the study of minor hypothyroidosis for it reveals several stigmata of this condition which otherwise might be overlooked. For example, in March 1905 we made the first application of thyroid therapy, aside from the treatment of myxedema, in a subject suffering with chronic rheumatism complicated with psoriasis. The first noted effect consisted in an increase in the appetite; the second result was a reduction in the marked feeling of cold which happened to be present (this sufferer was astonishingly cold and lived in a degree of heat that was altogether preposterous). Strangely enough the thyroid therapy made a marked diminution in this peculiarity and also benefited the rheumatism.

"The form of treatment applied in other cases of chronic rheumatism also directed our attention to a certain degree of benefit upon constipation." Elsewhere in the same book the author connects thyroid disturbances with rheumatic manifestations and quotes a large number of reports to the effect that "the reality of the thyroid causes of chronic rheumatism is incontestable. Its existence depends in many cases on thyroid lesions."

Chronic rheumatism is quite common in subjects presenting signs of hypothyroidosis

and it is well known that rheumatic manifestations may be associated with or aggravated by incidents in the menopause. Frequently rheumatic manifestations follow thyroid atrophy due to pathological conditions or following thyroidectomy for Graves's disease, but the most important proof is the fact that the use of thyroid extract in many cases ameliorates rheumatic manifestations.

Thyroid therapy may be applied frequently in the treatment of various forms of arthritis with very good success. There are a number of papers recording and attempting to explain its remarkable results in various forms of chronic rheumatism. Probably the most comprehensive of all these communications is that of Leopold Levi who reports three hundred cases treated under his direction during a period of eight years. This investigator, who is well known to those who have read the literature on the thyroid gland, differentiates a form of rheumatism which is due to what he terms thyroid instability. The disease is found in relatively young persons, is only slightly deforming, and usually affects the smaller joints. It seems to progress by fits and starts. In these cases the joint disturbances are by no means the only troubles. Occasionally there are other manifestations of thyroid disorder sometimes evidently due to increased thyroid activity and at other times, the majority of cases it may be noted, the result of decreased thyroid activity.

The manner in which this form of rheumatism responds to treatment varies considerably with the associated manifestations. In the juvenile form, where there is no very serious deformity, the response to treatment is good, and while the serious chronic and so-called "incurable" cases do

not respond as rapidly to this treatment, there is no doubt that persistent thyroid therapy causes a very decided benefit. Levi concludes that in many cases of chronic rheumatism thyroid extract is "a precious remedy," securing an average of results that is very encouraging, and occasionally producing astonishing changes for the better. According to this writer: "Thyroid therapy should be placed in the first rank of the therapeutic armamentarium in the treatment of chronic rheumatism." He recommends a daily dose ranging from .05 to .30 grammes (1 to 5 grains) in divided doses. The average is $1\frac{1}{2}$ to 3 grains per day and it must be continued for as long as six months.

The mechanism of the action of thyroid extract in certain conditions has for some time been in doubt; and this is especially true as far as its influence in rheumatism has been concerned. This extract, above all others, has been considered one of the best means of enhancing cell activities and increasing the metabolic exchanges. Since the metabolism in rheumatism is much below par, any advantage that accrues from thyroid therapy might be considered as due to this salutary influence upon the cells.

A scientific explanation of this may be gathered from some interesting experiments by Slosse who was professor of physiology at the University of Brussels before the war. He has carried out a number of experiments both in the laboratory and in the clinic to connect the disturbances of nitrogenous metabolism with the work of the ductless glands and as a result of his investigations he states that under normal circumstances the thyroid gland secretes a "*hormone de désamination*"—a deaminizing hormone—which influences the nitrogenous exchanges and when

deficient causes a reduction of the power of the cells throughout the whole organism to split up the albuminoid substances, especially the nucleo-albuminoids, from which uric acid and other substances of the purin group are formed. Theoretically then, the enhancement of thyroid action should favor nitrogenous metabolism, and a large series of urinalyses made by Slosse and his associates substantiates this. The favorable clinical experiences which have been recorded by a number of French writers in a measure may be explained by these findings.

There is another form of chronic rheumatism somewhat similar to that which reacts to thyroid therapy. Like it, it is of endocrinous origin, but instead of being due to thyroid insufficiency, it is a result of ovarian insufficiency. This is the rheumatism which appears in women after the menopause and it may be quite possible that its etiology is partly due to thyroid disturbances. At least it reacts more quickly to luteal therapy, especially if this procedure is applied early in the course of the disease. Dalché reports that the administration of ovarian substance has given very good results in such cases, and in suitable cases he occasionally combines thyroid and luteal substance.

It is difficult definitely to state which case of rheumatism is of thyroid origin and which is not. According to Leopold Levi and de Rothschild the only way to answer this question is empirically to apply thyroid extract, and in explanation of this they may be quoted as follows: "From the practical point of view, in all forms of rheumatism in which the cause is unknown, it is an advantage to apply thyroid therapy. In such cases there will be more chance of results if the subject is young, if the rheumatism is accompanied by subacute exacerbations,

and if there is only slight deformity. In those cases where there is a decided thyroid influence the initial results will be rapid, sometimes immediate. If the treatment does not act immediately, it is advisable to vary the doses, sometimes reducing them and giving the remedy for a longer period. There is no doubt that this medication may render very great service in the treatment of certain rheumatics, without exposing them to the least danger." Of course Leopold Levi looks at every disease from the standpoint of its relation to the thyroid gland—he has been called "thyroid mad"—but the fact remains that he and his associate, Baron Henri de Rothschild, are successfully treating scores of cases at their hospital with thyroid.

The thymus is another gland which seems to be connected in some way with the joint manifestations of rheumatism and several references have appeared in the literature in the last few years extolling the value of thymus extract in these chronic joint conditions.

Naturally, it is not always possible to cure the disease—far be it from me to hint anything as definite as this—but according to Nathan the first and most important beneficial change due to the thymus medication is a reduction in the pain present, and later, provided the case responds to the treatment, there is an increased mobility as well as a general betterment of the nutrition and health.

It is not yet possible to explain why thymus medication does this and in what mysterious manner these results are brought about, but we know, at least, that in early life the thymus controls in a considerable degree the mineral metabolism, for one recalls that thymectomy causes a remarkable softening of the bones and an obvious dis-

turbance of mineral metabolism. It may be, therefore, that there is a principle in thymus extract which favors the reestablishment of the disordered metabolism of calcium salts which is undoubtedly a factor in these rheumatic cases, and that the benefit is due solely to this. Suffice it to say that in the treatment of arthritis deformans Nathan recommends 15 to 30 grains of thymus substance three times a day given for weeks or months and some very encouraging results have been reported.

In conclusion let us remember the intimate relation of the ductless glands to metabolism, the undoubted connection between rheumatism and metabolic disturbances and, therefore, the possibilities of organotherapy as a meritorious adjunct in the treatment of certain forms of rheumatism.

880 West 180th Street.

SOME PHASES OF RHEUMATISM IN YOUNG CHILDREN.

BY

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It is freely admitted in the case of the rheumatic child, that preventive measures offer a splendid field for endeavor while the child is ill, and that serious complications may often be avoided or limited, but while the child is in a state of health is there any scheme of prophylaxis which is of benefit? The answer to this question would depend upon whether we considered rheumatism in the child as an infection or dependent upon a diathesis.

There is a marked tendency in these days

when laboratory experimentation has been so brilliant in its results and has achieved so much, to belittle the influence of those things which we previously deduced by other means of investigation. And, so since the search for the causative factor of rheumatism by laboratory methods there has been a growing inclination to disregard the influence of other factors—notably a diathesis favorable to the development of rheumatism.

The laboratory investigator studies all cases upon a somewhat experimental basis, ferreting out the laws of injurious effect which harmful agents have upon all members of society. He is unable by this method to explain the cause of every disease. The disease may be produced by conditions which are not at all general, therefore we are often forced to the conclusion that there exists a causal factor in the individual which is not common to all members of society.

Recognition of a diathesis presupposes that appropriate measures will be instituted to prevent the disease which such a diathesis favors. The chief object in the recognition of this diathesis in the child is the prevention of cardio vascular changes. Before these occur, there are present a multiplicity of symptoms which when recognized are danger signals.

A child who has a rheumatic parent is very liable to develop the disease, and if both parents are rheumatic, the liability becomes almost a certainty.

We cannot afford to overlook this influence and therefore a careful taking of the family history becomes a necessity. Parents may deny having had rheumatism, and yet when pressed further will admit the existence of one or more of the non-articular manifestations of the disease, al-

though these are not recognized by them as rheumatic. There is always danger of overlooking these if the history-taking is hurried.

Then having satisfied ourselves that the child has a rheumatic tendency, it is incumbent that the defensive arrangements of the body be put into the best possible condition.

We must all recognize that there are in children certain initial manifestations of rheumatism and in the ferreting out of these and giving them their proper values, we are doing an important work in the limiting of the disease.

I shall mention these, as in my experience they have been important; and the first, because the most common, initial manifestation is:

Tonsillitis.—Not every tonsillitis is of rheumatic origin but fully one-third of the cases are of such genesis. In what other way can we explain the marked frequency of the initial sore throat of rheumatism?

The type of the inflammation has some bearing. In a large proportion of cases the subacute type holds first place; the chronic variety second, and the suppurative type least prominent.

The indication for treatment is clear. All covered cryptal tonsillar tissue must be removed and that entails complete ablation. If it is the first attack, or if the crypts are not obstructed, tonsillotomy as ordinarily done is sufficient. Adenoid vegetations which are usually associated with subacute or chronic tonsillitis must also be removed.

Pain in the chest and exertional dyspnea (irrespective of disease of the heart) as an initial manifestation is often marked enough to attract the attention of the parents without suggestion. In this connection anemic murmurs are common. In such

instances the indications are for the administration of a tonic containing iron. Abundance of fresh air should be provided day and night.

Chorea manifests itself as the initial symptom in some cases. When chorea is once established there is a distinct predisposition in that child to recurrence. And the recurrences are brought about by causes which would not affect a child who had never previously been attacked. Therefore, the same care and restraint must be placed upon such a child as would be used in any markedly neurotic subject.

So-called "growing pains" or myalgia is present in a small per cent. of the cases as an initial manifestation. Much has been written about the "growing pains" fallacy and this may have led some to believe that myalgia is almost a positive sign of rheumatism and that its absence indicates the absence of the disease. This error must be corrected. Myalgia is a very common accompaniment of all of the infections in children and is readily induced by overexertion. Therefore *one of the "growing pains" fallacies has been its overestimation.* The peculiarity of a rheumatic myalgia is this: that it is as severe at one hour of the day as at another; it occurs independently of exertion, and is a late manifestation of rheumatism instead of an early one.

The manner in which children are clothed is often the cause of myalgia which is called growing pains. For instance the exposure of a child's limbs in cold weather satisfies the esthetic taste of the mother, but is harmful. We cannot always modify the dictates of fashion, but we need not sanction them.

Torticollis and subcutaneous nodules might well be considered in the same way. They are rarities and may occur among

the early signs of the disease but are never initial manifestations.

Cyclic vomiting and cyclic diarrhea are commonly associated with other manifestations of systemic poisoning and such children often exhibit the nervous phenomena which are associated with a rheumatic diathesis. This association is more than coincidental and therefore many of these cases must be accepted as an expression of rheumatism in the child.

Pleurisy and frequent attacks of bronchitis are all quite frequent accompaniments of rheumatism but not as initial symptoms. Their common association with the disease must suggest its possible existence as an etiological factor and thereby would indicate the appropriate treatment.

Epistaxis and enuresis might suggest the possibility of rheumatism if they were persistent and other causes excluded. Often in these instances a carefully taken history will reveal other manifestations of rheumatism which were not suspected.

Erythema must arouse a suspicion as to a rheumatic origin.

Have we been too ready to accept the foregoing manifestations as being rheumatic? We are not yet in a position to definitely define rheumatism as it occurs in childhood, therefore our methods of diagnosis must be less exact than actual demonstration. But when we find these individual facts so prominently associated with cardiovascular changes which have no other demonstrable etiology than rheumatism, we may be confident in the diagnosis of individual cases. When we are satisfied or even suspicious that any of these symptoms and phenomena are the initial manifestations of rheumatism the treatment must include the treatment of that disease.

Our aim must be to limit the possible

serious consequences of a well-advanced disease. It is not necessary or wise to wait for articular developments. *The time to treat rheumatism successfully, in children, is when any clinical manifestation backed up by a positive family history makes us suspicious of the tendency to the disease.*

I have emphasized the importance of the earliest recognition of these manifestations because without such there could be no appropriate treatment or care of the child. Every known means must be adopted to prevent their recurrence. I have purposely left the consideration of the joint involvement as an initial manifestation until this point.

Joint Involvement.—The prominent feature is for a certain joint to be involved for a few hours and rarely for a period over three days. This involvement of the joints ushers in what is commonly called acute articular rheumatism. Very few joints are attacked, and it is the larger ones which seem to suffer most, so that the knee, the ankle and wrists are most frequently involved. The slight amount of pain and swelling may delay the diagnosis and also the treatment.

Now when active symptoms are present, the treatment and care of the child must be rigorous. There are several indications; these are etiological, pathological and clinical.

The etiological indications are:

(a) *Absolute Rest, both Mental and Physical.*—This means that the child must be in the recumbent position and allowed to make little exertion. To secure mental quietude visitors must be excluded and old toys used and old stories told. The administration of a sedative is permissible and often effective in its result.

(b) *The avoidance of solid food* for a few days and the absolute abstinence from all meats or meat extractives for several weeks. Sugar must also be restricted to the

lowest possible amount or saccharin used in its stead. All foods which are rich in proteid should be restricted. I never allow the use of whole milk.

The pathological indications are:

(a) *To Combat the Inflammation in the Joints.*—This may be done by the stimulation of the cutaneous circulation. Along this line, the hot blanket pack and hot fomentations are used until the temperature falls or the acute pain is relieved.

(b) *To Limit or Prevent an Extension to the Heart, Lungs, Pleura or Meninges.*—Here is the place for elimination. Skin, kidneys and bowels must be kept active. Warm baths followed by cool sponging or friction over the parts of the body free from inflammation will be useful. Hot enemata are often very efficient. As a rule I have given them once every twelve hours for two or three days. Here again it is necessary to lay special emphasis upon the value of absolute rest. Free water-drinking should be encouraged.

The clinical indications are:

(a) *Hyperpyrexia.*—This may be treated by the use of an ice-cap and sponging with tepid water accompanied by mild friction and no drying. Unless the temperature rises above 102° F., it may be disregarded as an indication for direct treatment.

(b) *Pain in the Joints.*—Rest, and the local applications already mentioned will relieve and particularly if the joint be smeared with oil twice daily.

(c) *To Limit Damage to Joints.*—Gentle or simple flexion of the joints as soon as the temperature has subsided will limit permanent damage.

(d) *Tachycardia.*—When this occurs there should be applied over the heart, a cold compress for at least fifteen minutes of every hour or an ice-bag may be used in its stead. The bromides are grateful as the child is usually in a very nervous state.

(e) *Profuse Perspiration.*—If this occurs during the first few days it should not be checked but the little one should be wiped dry as frequently as it occurs. Occurring later in the disease, it may be gradually stopped by a bath with a tepid temperature at first, which is gradually reduced to about 85° F. This may be used twice daily.

(f) *Anemia and General Debility.*—

When convalescence is once fairly established the use of tonics is indicated. Every rheumatic child suffers more or less from blood impoverishment. In the very acute cases, anemia is so severe and sudden that the demand for treatment is urgent. I am quite in favor of an early though gradual return to the usual diet, and it is my habit to proceed as follows: After the restrictions as indicated previously, when the temperature touches normal, I begin the use of legumes, undextrinized cereals and some of the dried vegetables, as peas, beans and lentils. Baked potatoes and eggs are allowed the next day and also fish. Within ten days after the subsidence of an acute attack the diet is liberal and meat is allowed sometimes once daily. It is most important that we give to the convalescent child a diet which is as nutritious as possible and no doubt much of our prolonged convalescence was formerly due to the restriction of the diet for weeks after an attack. My reasons for this are given later on. Sugar seems to me to be the most harmful article and its use is always restricted irrespective of the prevailing condition.

The salicylates occupy a well-deserved place in the treatment of rheumatism. They are palliative, however, and for the time overcome or modify the rheumatic manifestations. Their use cannot be long continued in children because of their prompt tendency to disturb the digestion. Salicin is less objectionable than the salicylate of soda and can be readily given in the dose of one grain for each year of the child's age and repeated every three hours. A reduction in the temperature and in the signs of inflammation in the joints is an indication for the reduction and somewhat rapid withdrawal of this class of medication. Aspirin has a weak but rather prolonged action as an analgesic in rheumatism and its chief indication is in those cases in which the salicylates are beneficial and after the acute pain has been relieved by other means. But the pain of acute rheumatism in children is so insignificant, as a rule, that no inter-

nal analgesic is indicated. I have abandoned its use.

Along with the administration of the salicylates or immediately following the discontinuance of their use, bicarbonate of soda should be given. Its use must, however, be kept up for a long time (four to six weeks) although in steadily decreasing doses.

Can anything be done to limit or prevent the development of cardiovascular changes in a child who has a rheumatic proclivity or who has suffered from an acute attack of the disease or one of its initial manifestations?

It is hardly necessary to review the frequency with which all rheumatic manifestations are accompanied by cardiac changes. The experience which each one can recall of one fatal case can be repeated and repeated so that such an experience is constantly recurring, and there are serious consequences of such an occurrence. Immediately the heart becomes involved we are confronted with the probability that the life of the child will be seriously affected—there must follow diminished usefulness and restricted activity. The insidiousness with which such a condition may ensue must always be borne in mind. To the lay mind there is danger to the heart in the course of rheumatism but only during the very acute stage of the disease. Unless the disease manifest itself by joint symptoms they do not realize the necessity of any special care. It is only during recent years that the profession has fully realized the importance of this phase of rheumatism in children. So marked are the influences of cardiovascular changes upon the course and outcome of the disease that it almost leaves one in doubt as to whether or not they

should be considered as the typical characteristics of the disease.

There is this chief difference between the adult and child types of rheumatism. In the former it is expressed as an acute polyarthritis, with the symptoms all massed, while in the latter, its common occurrence is in nonarthritic forms with cardiac changes as a common manifestation and the symptoms spread over a long period, so that often the history of the disease is the history of that child's life.

There is but one known means whereby we are even reasonably certain that we are favorably influencing the possible occurrence of cardiac changes. That one means is rest, rest absolute and prolonged. To secure cooperation, the parents must be made aware of the dangers. There must be no temporizing with the parent; the case must be fairly and forcibly stated and the responsibility for an infraction of the rules placed where it belongs.

Now the necessary rest which is entailed upon the child helps to bring about a condition characterized by the retention of waste products and muscular atony. If the diet be restricted for several days to liquids, the tissues undergo slight degenerative changes and waste products are more abundant. These changes occur more readily in the child suddenly deprived of its usual liberty than in one who gradually limits his activities. This is my reason for a rapid return to the proper diet. It is also one of the reasons why we might often advise a change of climate or of surroundings with benefit.

And if climatic treatment is instituted, the seashore seems to offer the most advantages to the child, although it has a close second in mountains of low altitude with few or no lakes.

And the responsibility of the physician does not end with the care and treatment of an individual case. If there are other children in that family they must be protected. The parents must be made to realize that what to them might seem a slight illness may be but the beginning of a disease which will limit the usefulness of their child, narrow its activities, or possibly result in its premature death.

STAPHYLOCOCCAL INFECTION OF THE ALIMENTARY TRACT AS A CAUSE OF CHRONIC AR- THRITIS.

BY

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The determining factor in the evolution of many cases of rheumatoid arthritis is infection of the upper alimentary tract with pyogenic staphylococci. These organisms are continually ingested in food, but, unless swallowed persistently in unusually large numbers are destroyed, especially by the hydrochloric acid of the stomach, or by the intestinal secretions. I have examined duodenal chyme removed during life in a great variety of conditions, and, excluding cases of chronic arthritis, have only once been able to obtain a growth of staphylococci. In this exceptional case the patient was suffering from a staphylococcal tonsillitis at the time of operation. From these observations it is evident that ingested staphylococci do not usually reach the duodenum alive but may do so if swallowed in large numbers from some septic focus in

the mouth or nose. Even such organisms as escape destruction by the gastric juice cannot give rise to chronic arthritis unless, their passage through the alimentary canal being hindered by intestinal stasis, they gain entry to the mucous membrane. The most favorable conditions for the production of chronic arthritis would thus appear to be

toxins or of simpler toxic modifications of food products.

Figs. 1, 2, 3, and 4, illustrate coincident ileal delay and rheumatoid arthritis in two patients. Figs. 5 and 6 show joint changes and hypertrophy of the pelvic colon in a case of Still's disease. I have detected by X-ray examination varying degrees of in-



Fig. 1. E. R. (same case as Fig. 2). Ileal stasis in rheumatoid arthritis. Distribution of bismuth meal at the 8th hour.

the simultaneous occurrence of a persistent inflow of staphylococci from the nose or mouth, a low gastric acidity and chronic intestinal stasis. Under these conditions the organisms multiply in the intestines and infecting the mucosa and surrounding tissues give rise to joint changes either through the agency of complex bacterial

testinal stasis in fourteen consecutive patients with rheumatoid arthritis.

The close relationship between staphylococcal infection of the upper alimentary tract, and chronic arthritis can be seen in the following description of observations on patients treated by Sir W. Arbuthnot Lane.

Case 1. F. P., an unmarried woman of

27 had for years suffered from pain and swelling in the joints of her fingers, wrists, elbows, ankles, knees and spine. The pain followed immediately upon a short pyrexial attack three years ago, which probably represented the original acute staphylococcal

tension to 150° . Radiographic examination¹ showed that the stomach was dropped and atonic and the duodenum elongated, its vertical length being $3\frac{1}{2}$ inches. There was regurgitation from the third to the second part and tenderness



Fig. 2. E. R. (same as Fig. 1). Extreme bony changes in the right hand.

infection. When first seen the morbid changes were chiefly periarticular and characteristic of rheumatoid arthritis as also were the X-ray appearance of the bones. (Fig. 7). She could only use her fingers with great pain and difficulty. Flexion of her left elbow was limited to 60° and ex-

over the third part of the duodenum. The last coil of the ileum was tender and hypertrophied and although the

¹In all X-ray examinations four ounces of bismuth oxycarbonate suspended in water were given an hour and a half after a meal and no food subsequently, until the stomach was empty.

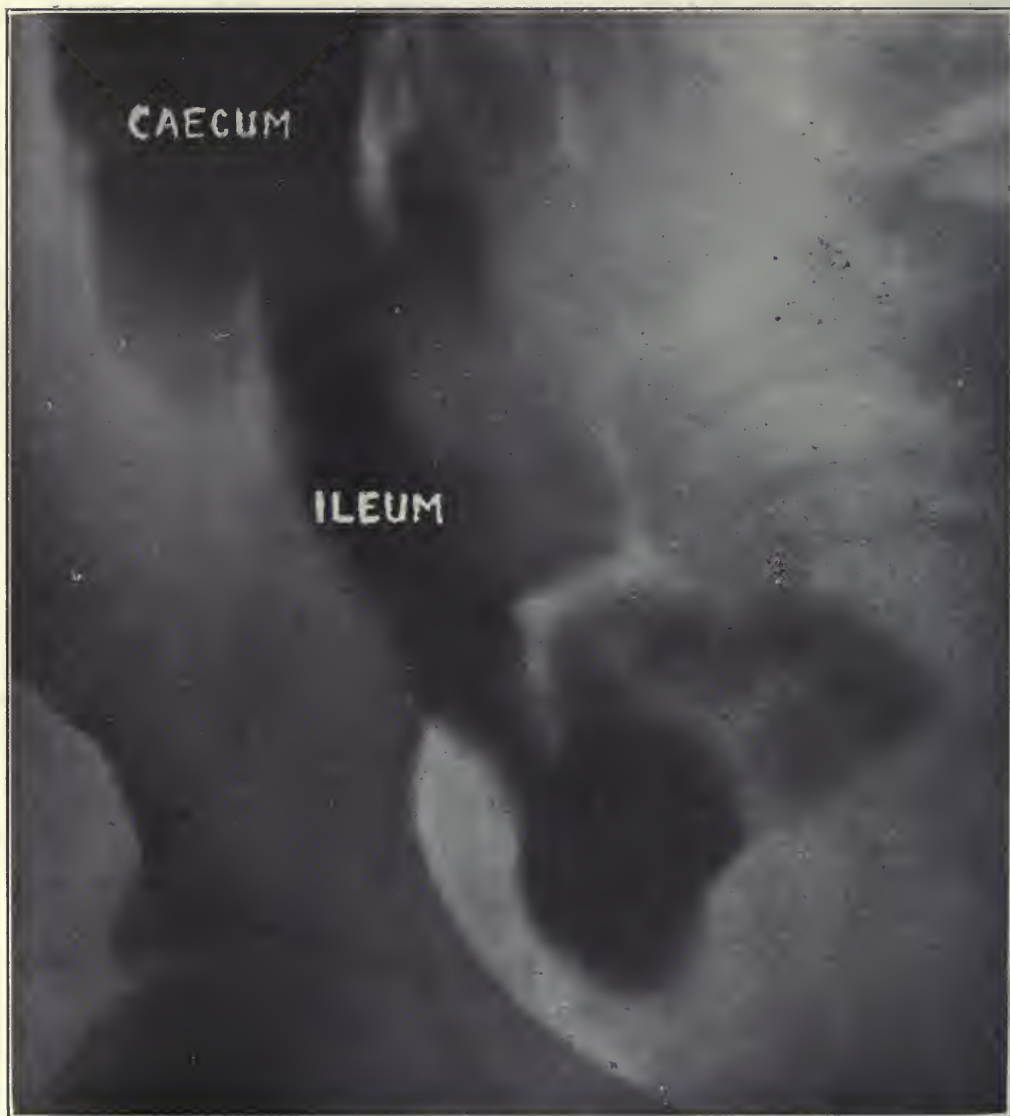


Fig. 3. B. P. (same as Fig. 4). Ileal stasis and rheumatoid arthritis. Distribution of bismuth meal after $8\frac{1}{2}$ hours.

stomach was empty at the fourth hour the ileum still contained one-sixth of the bismuth after eight and a half hours (in a normal subject it would have been empty after seven or seven and a half hours).

findings confirmed. The most striking abnormality was the size of the mesenteric glands which were large and grey and on incision exuded a little muddy fluid. There was no evidence of caseation, calcification



Fig. 4. B. P. (same case as Fig. 3). Rheumatoid rarefaction in the bones of the right hand.

Bismuth did not begin to enter the cecum until after the fourth hour and was present in all parts of the colon after twenty-four hours. The pelvic colon was elongated. Colectomy was performed and the X-ray

or fibrosis. From one of these glands, removed from the mesentery of the ileum, a profuse and pure growth of staphylococcus aureus was obtained. Pyogenic staphylococci were also present in the ileal chyme.

The demonstration of the presence of a chronic staphylococcal infection could not be more complete. The significance of its occurrence is enhanced by the fact that I have made cultivations from ileal chyme secured at operation from forty other patients not the victims of chronic arthritis

the following day and has not since returned. Comparison of Fig. 8 taken three days before operation with Fig. 9 taken three weeks later demonstrates the speed at which the hands regained their natural contour.

Case 2. B. E., a woman aged thirty, af-



Fig. 5. F. C. (same case as Fig. 6). Hypertrophied pelvic colon in Still's disease.

and that in none of the cases were living staphylococci present. That this infection encouraged by intestinal stasis was the cause of the arthritis is evident from the rapidity with which the symptoms subsided after colectomy. The pain disappeared on

fords another instance of this type of infection. She had suffered from infrequency of defecation and pyorrhea alveolaris for many years. Two years before examination her foot joints began to swell. Swelling spread to the fingers, wrists, spine and right

knee, involving the soft parts only. Fig. 10 taken in December 1914, when many of her finger joints were partially ankylosed shows the X-ray appearance of her hands which are clearly those of rheumatoid arthritis. Intestinal stasis was detected in all parts of her alimentary canal. Her stomach was empty in four and a half hours and in the erect attitude its greater curvature occupied the true pelvis. The duodenum was

marked ptosis of the colon and the transverse and pelvic portions were tortuous and greatly elongated (Fig. 11). Colectomy was performed. From duodenal chyme removed during the operation a growth of staphylococcus aureus was obtained. Staphylococci were seen in the ileal chyme also but in the cultures they were overgrown by *B. coli*. Fig. 12, taken a few days before colectomy, and Fig. 13, taken four months later dem-



Fig. 6. F. C. (same case as Fig. 5). Changes in left knee joint in Still's disease.

elongated and showed marked regurgitation from the third to the second part. The lower coils of ileum were hypertrophied and were not free from bismuth until the ninth hour. Bismuth did not begin to enter the cecum until the fifth hour and had only reached the hepatic flexure by the thirty-second hour. It was present in all parts of the colon from the hepatic flexure to the rectum at the hundredth hour. There was

onstrate the rapid return of the soft tissues of the hands to a natural condition and the disappearance of the ankylosis, although no massage, bath or electrical treatment had been employed in the meantime.

Case 3. D. W., a boy aged five, illustrates the effects of a similar infection in childhood. He suffered from Still's disease, the counterpart in early life of rheumatoid arthritis in adults. He had been ill for



Fig. 7. F. P. (same case as Figs. 8 and 9). Rheumatoid arthritis. Bony rarefaction in the right hand.

two years, during the greater part of which he had been treated at one of London's leading hospitals for children. The outstanding clinical features of his disease were marked wasting (his weight was 2 st. 10 lbs.) and chronic enlargement of his joints. (Figs. 14 and 16). He was quite unable to walk and his pain and

increased in size and palpable. He had intermittent attacks of pyrexia. Blood cultures made by Dr. John Eyre during these attacks gave a pure growth of staphylococcus citreus and his opsonic index for this organism was 1.8; both of which points are of surpassing interest when viewed in the light of the following history of his



Fig. 8. F. P. (same case as Figs. 7 and 8). Rheumatoid arthritis before colectomy.

weakness were so great that the assistance of two nurses was required whenever he was moved. The principle joints involved were the ankle, knees, wrists, elbows and those between the cervical vertebrae; but the changes were not confined to these regions. Most of his superficial lymphatic glands were enlarged. His spleen also was

alimentary canal. Seven hours were required for the evacuation of his stomach although a little bismuth passed through the pylorus almost as soon as taken. The duodenum was elongated and bismuth passed through it very slowly. There was great delay in the ileum and very little bismuth entered the cecum during the first

eight hours. The passage through the colon was sluggish and after twenty-four hours most of the bismuth was still in the first half of the large intestine (Fig. 18, for which I am indebted to Dr. A. C. Jordan). A laparotomy was made and the duodenum

came infected by this organism which had then gained entry to the tissues through the intestinal mucosa and produced chronic arthritic changes in all parts of the body. After the operation rapid improvement took place and in a few weeks time he was



Fig. 9. F. P. The same case as Fig. 8 three weeks after colectomy. Note the disappearance of the swelling and ankylosis.

seen to be distended. There was a marked ileal kink and the pelvic colon was greatly elongated. Ileocolostomy was performed and cultures made from the ileum. From these a staphylococcus citreus was obtained. It is clear that the stagnant ileum had be-

able to play about entirely free from pain. Nine months later stiffness reappeared in the vertebral joints and although there had been no recurrence of pyrexia he was still thin and anemic. X-ray examination revealed regurgitation into the blinded colon,

bismuth having ascended as far as the cecum forty-eight hours after a bismuth meal. Colectomy was therefore performed. A year later he was going to school and playing games vigorously. It is now three years since his first operation and his re-

subsided and his joint movements are almost perfect. Figs. 14 and 16, taken during his partial relapse after simple ileocolostomy and Figs. 15 and 17 taken seventeen months later reveal at a glance the change in the outer contour of his joints and Fig.



Fig. 10. B. E. (same as Figs. 11, 12 and 13). Rheumatoid arthritis. Rarefaction of the bones of the right hand.

covery appears to be complete. He has gained a stone in weight during the last eighteen months and his pallor and weakness have gone. The enlargement of his lymphatic glands and spleen have entirely

19 shows the healthiness of their X-ray appearance.

SUMMARY.

The facts established in this paper are that:

1. In many cases of chronic arthritis pyogenic staphylococci are present in the intestinal canal, and, through this portal, gain entrance to the mesenteric glands and even to the blood stream.

2. Pyogenic staphylococci are not present in the small intestine of patients suffering from chronic intestinal stasis without

The suggested explanation of these phenomena is that ingested staphylococci sometimes escape destruction in the stomach, and, their growth being encouraged by intestinal stasis, they infect the mucous membrane and surrounding tissues, and thereby produce morbid changes in the joints.

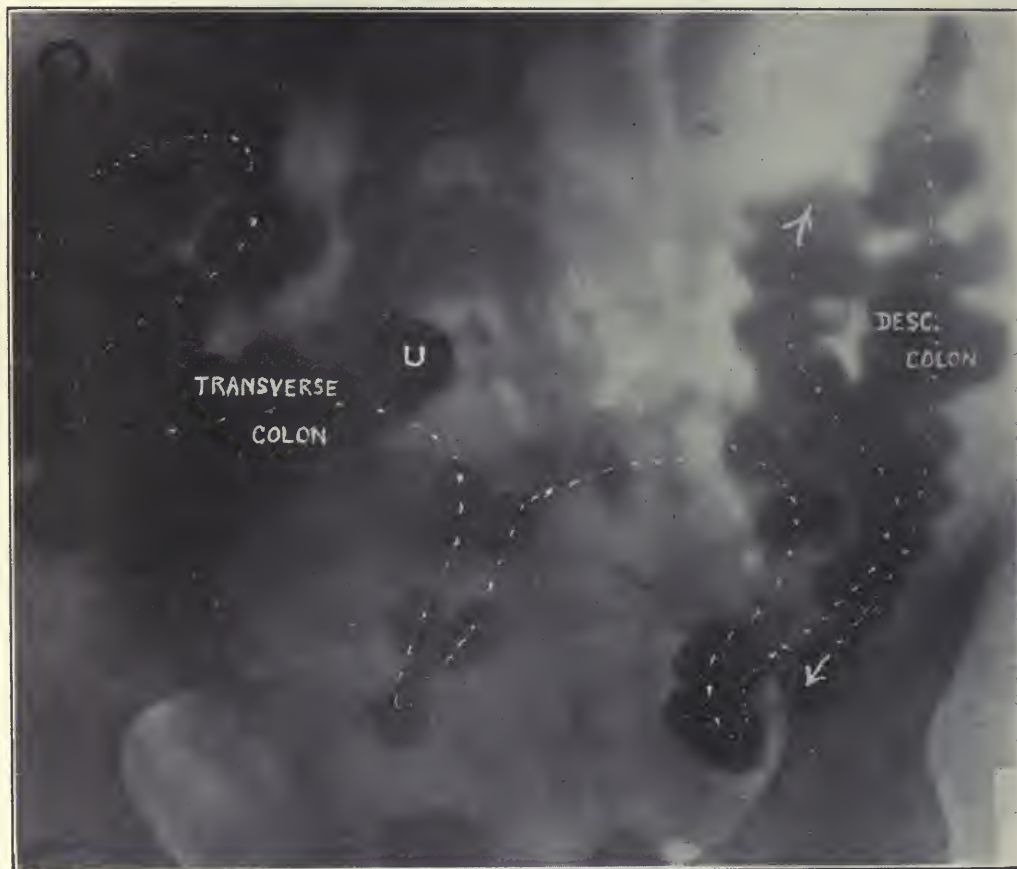


Fig. 11. B. E. (same as Figs. 10, 12 and 13). Rheumatoid arthritis. Distribution of bismuth meal at the 100th hour. The dotted line indicates the course of the extremely tortuous transverse colon.

chronic joint changes.

3. Chronic intestinal stasis was present in fourteen consecutive patients with rheumatoid arthritis.

4. Examples have been given of the usual way in which ankylosis, pain and swelling of the joints in rheumatoid arthritis subsides after colectomy.

Stiff Neck.—In the stiff neck, in lumbago, and in muscular rheumatism wherever located, cimicifuga is probably the best remedy we have.—*Med. Summary.*

Filling of the urethra with warm olive oil will sometimes facilitate the passage of the catheter.—*Med. Fortnightly.*

SOME REMARKS ON THE CAUSATION AND TREATMENT OF RHEUMATOID ARTHRITIS.

BY

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Rheumatoid arthritis like tuberculosis, Still's disease and innumerable other infections seems only to occur in individuals whose food supply has been polluted by be-

ing delayed for an abnormal length of time in the small intestine and by the changes which take place in it in consequence of such delay.

The reader may naturally ask what evidence there is of the truth of this statement. I will give the necessary evidence confining myself to the consideration of rheumatoid arthritis alone.

I have already demonstrated in the clear-



Illustrating Dr. Mutch's article.

Fig. 12. B. E. (same as Figs. 10, 11 and 13). Rheumatoid arthritis before colectomy.

est manner possible the way in which food is delayed in the small intestine consequent on a primary accumulation in the large bowel. I have shown that the delay and infection of the small intestine may be the result merely of a stagnation of material in the cecum. It may also be brought about

American surgeons. The bacterio-chemistry of this condition has been described very clearly by Dr. Nathan Mutch in the third edition of my book on "Chronic Intestinal Stasis" and much more elaborately in the April number of the *Journal of British Surgery* where Dr. Mutch has dealt with



Illustrating Dr. Mutch's article.

Fig. 13. B. E. The same case as Fig. 12 four months after colectomy. Note the disappearance of swelling and ankylosis.

or accentuated by a control of the ileal effluent by an appendix which passes up behind it or by means of an acquired membrane which produces an angulation and torsion of the small bowel to which the term "Lane's kink" has been applied by

the subject in a very masterly manner.

I have shown, and Dr. Jordan has afforded me invaluable assistance in confirming my views, that patients suffering from rheumatoid arthritis also suffer from chronic intestinal stasis in a marked degree.

I need not again define here the condition to which I gave the name "chronic intestinal stasis" since the term has been accepted generally, even by those who for a time would not allow that such a condition could exist.

Not only do these cases of rheumatoid

urinary passages, especially in the female etc.

It is quite true that some relief from the symptoms of rheumatoid arthritis is frequently obtained by dealing with these secondary infections since they also aggravate very materially the disability and depreciate the vitality of the individual.

This is so marked that it has led some observers to believe that rheumatoid arthritis may be produced by these other secondary infections alone.

This certainly is not my opinion since rheumatoid arthritis frequently exists in patients suffering from chronic intestinal stasis in whom no other secondary infections exist.

It is, of course, important to deal with any existing secondary infections as well as with the primary cause, namely, the contamination of the food supply due to the control of the ileal effluent.

Further evidence as to the dependence of the infection of the joints, etc., on chronic intestinal stasis in rheumatoid arthritis is afforded by the fact that all treatment that benefits this disease does so by facilitating the flow of the ileal contents into the large bowel. It acts either by posture, by purgation or by the use of paraffin oil which as we all know merely facilitates the passage of the contents of the bowel by lubricating it. I cannot exaggerate the general usefulness of this merely mechanical agent in the treatment of this and other consequences of chronic intestinal stasis.

There are other treatments which influence this ileal infection. These act by neutralizing the changes in the food delayed in the small intestine and consist of the use of antiseptic drugs, the organisms of sour milk as advocated by Metchnikoff,



Illustrating Dr. Mutch's article.

Fig. 14. D. W. (same case as Figs. 15, 16, 17, 18 and 19). Still's disease before colectomy. Note the wasting of the muscles and the deformity of the ankles, knees, wrists and elbows.

arthritis suffer from chronic intestinal stasis but they are frequently affected by infections other than that of rheumatoid arthritis. I mean such infections as pyorrhea alveolaris, infections of the genito-

or by avoiding such foods as are specially poisonous if kept for an abnormally long period of time in the small intestine.

Whatever treatment has proved efficaci-

The most definite evidence we have of the dependence of rheumatoid arthritis upon ileal stasis and its consequences is the surprisingly rapid subsidence of symptoms



Illustrating Dr. Mutch's article.

Fig. 15. D. W. The same case as Fig. 14 eighteen months after colectomy. Note the disappearance of the deformity around the joints and the increase in muscular subcutaneous tissue.

ous is such as is capable of improving the condition of the food supply of the individual, which is the most important consideration possible to the continuance of what is called "health."

when the ileal effluent is freed by an ileocolostomy by means of which the ileum discharges its contents into the end of the large intestine. This is effected by dividing the small intestine and by putting it into the

pelvic colon. In the vast majority of cases the removal of the large bowel is advisable at the same time to obviate the regurgita-

the marvelous rapidity with which after colectomy the pain and swelling disappear and a free range of movement is obtained



Illustrating Dr. Mutch's article.

Fig. 16. D. W. (same case as Figs. 14, 15, 17, 18 and 19). Still's disease before colectomy. In addition to the features seen in Fig. 14 note the prostration of the patient.

tion of fecal material backwards into it and the avoidance of gas accumulation in it.

Nothing in surgery is more striking than

in joints in which the surfaces of bone are still ununited by bone.

That this result is not due to the removal of the large bowel is shown by the fact

that if ileal stasis is re-established by a blocking of the pelvic colon by feces accumulated in it, all the symptoms of chronic

disease we are now considering, namely rheumatoid arthritis.

Much disappointment has resulted from the operation of colectomy from a want of knowledge of this fact and till surgeons generally can grasp the principle underlying a very simple problem there must exist a considerable opposition to the study of chronic intestinal stasis and the means employed for its cure and alleviation.

I do not mean that it is always necessary to perform colectomy to free the ileal effluent. In a large number of cases the removal of an appendix controlling the ileal effluent, or a band which produces the same effect, will enable the patient to overcome the disease. The great difficulty which has been experienced by quite competent radiologists in demonstrating ileal obstruction as produced by an appendix or band, I fancy is simply because they cannot grasp the fact that the obstruction must vary with the position of the patient and with his general condition at the time. It perhaps requires a little more skill and care to determine its presence than it does most of the more obvious results of chronic intestinal stasis. This is a difficulty that will be overcome by time and experience.



Illustrating Dr. Mutch's article.

Fig. 17. D. W. The same case as Fig. 16 eighteen months after colectomy. There is no prostration and muscular power is equal to that of other healthy boys.

intestinal stasis may return and the several consequences of such stasis, including the

After-pain of Quinine Injections.—A serious drawback to the intramuscular injection of quinine is the after-pain produced at the injection site. A. G. Peter (*The Lancet*, Oct. 24, 1914) has discovered that this can be prevented by adding to the quinine solution (usually quinine hydrochloride is employed) 1-2 grain of quinine and urea hydrochloride.

Since using this method, Doctor Peter says he has had no complaints from patients, even from those who are ordinarily very sensitive to quinine injections.—*Am. Jour. Clin. Med.*

THE ROLE OF THE PANCREAS AND THE INTERNAL SECRETIONS CONCERNED WITH THE DIGESTION IN THE CAUSATION OF THE ARTHRITIDES.

BY

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The study of the internal secretions if not in its infancy, at any rate, has not advanced

further than its adolescence. It is probable, and in my opinion an absolutely safe prediction to make, that a thorough and accurate knowledge of the functions of these glands and of the manner in which they play their part in the human economy will not only sooner or later revolutionize medicine, but also when that knowledge has been attained the conquest of many of the most deadly diseases will be in sight. At the present time, however, matters must be



Illustrating Dr. Mutch's article.

Fig. 18. D. W. (same case as Figs. 14, 15, 16, 17 and 19). Still's disease. The colon 24 hours after a bismuth meal showing stasis in the ascending and transverse portions.

dealt with as they stand, and enough is known already of the internal secretions to make it certain that they profoundly influence the working of all the organs of the human body and that when diseases of a certain nature occur, they are largely due

less rapidly, the mysteries of the ductless glands, and although on some occasions they may stray from the right path there is no doubt that the desired goal will be ultimately reached.

It would be a truism to state that many



Illustrating Dr. Mutch's article.

Fig. 19. D. W. (same case as Figs. 14, 15, 16, 17 and 18). After Still's disease. Right knee joint eighteen months after colectomy.

to an inadequacy, an over production or lack of the secretions of one or other of these glands. Moreover, the investigations of numerous research workers in various parts of the world are laying bare, more or

of the most serious diseases existing in civilized countries are brought about by disordered metabolism. This condition is the outcome frequently of poisoning by means of food, which is often due to the fact that

an internal secretion concerned with the digestive process does not act, or its action is defective and insufficient. So far as the connection between the arthritides and defective action of an internal secretion is concerned, at first thought, the connection does not seem to be particularly intimate. Yet when it is considered that some forms of arthritis are regarded by many good authorities as owing to disordered metabolism brought about by poisoning by food the argument in support of this connection, will not appear so far fetched. Granted that metabolism is greatly swayed by the internal secretions of the digestive tract and that certain phases of rheumatism arise from disordered metabolism and that the failure of an internal secretion to do its work properly is a potent factor in the causation of disordered metabolism, then it follows as "the night the day" that the internal secretions may have a somewhat close relationship to some rheumatoid conditions.

If such indeed be the case, how does this occur? Now, chronic intestinal stasis, according to many observers will induce alimentary toxemia or food poisoning in the bowel by reason of the production of intestinal putrefaction. Chronic stasis is a fertile adjuvant to bacterial multiplication and hence to alimentary toxemia and it has been argued and it seems with a good deal of plausibility, that poisons from the bowel, formed there, when the bowel is imperfectly emptied, obtain entrance into the circulation, thus poisoning the system and not infrequently causing rheumatoid arthritis. Incidentally it may be remarked that Sir Arbuthnot Lane claims that poisoning by such means is often the exciting cause of rheumatoid arthritis. The term alimentary toxemia is of course, not intended to convey the meaning that it is always due to

bacterial poisoning. The correct definition says Andrewes¹ of alimentary toxemia is the circulation in the blood of chemical poisons, whereby they are enabled to attack the cells or tissues for which they have the requisite chemical affinity. By alimentary toxemia therefore is understood the absorption from the alimentary canal of chemical poisons of known or unknown composition in sufficient amount, to cause clinical symptoms, the blood having served as the channel of distribution to the tissues which are poisoned. Given that this result is possible, there can be little room for cavilling at the statement that alimentary toxemia, mainly produced by failure of an internal secretion to perform its appointed task, is a factor to be reckoned with in the causation of rheumatoid arthritis.

It should again be emphasized that there are some alimentary toxemias which are obviously not of bacterial origin, and an endeavor will be made to explain to some extent, at least, the manner in which the system may become poisoned and rheumatoid arthritis supervene. As we subsist on foreign proteins, hydrocarbons and carbohydrates and as there is plenty of proof that alien proteins are sometimes highly toxic it follows that when such proteins obtain entrance to the blood stream that disease may ensue and this disease in certain cases may exhibit itself in the form of rheumatoid arthritis.

Andrewes sums up his discussion of alimentary toxemia thus: 1. In an important group of cases the poisoning is by foreign proteins as such, the defect lying in the liver which ought to shield the body from their effects. With this, bacteria, as a rule, has nothing to do. 2. The main effect of bacterial activity in the production of alimentary toxemia lies in their ability

to carry out protein cleavage beyond the capacity of the ordinary digestive ferments with the formation of products which, when in excess, the body is unable to neutralize. In a consideration of the poisons which may possibly be formed in the alimentary canal, it may not be amiss to discuss those substances which may be derived from the protein. Such are of the first importance, those derived from the carbohydrates or fat, generally speaking not being toxic and when so only slightly. On the other hand, protein during ordinary digestion even when not acted on by bacteria in the intestine, often becomes of a toxic nature. While in the stomach the action of hydrochloric acid and pepsin on the protein proceeds rapidly, with the result that two-thirds of the protein is converted into peptone and about two-fifths is in the form of proteose before the chyme passes on through the duodenum. Further the protein and the proteose when traversing the pylorus are acted upon by the trypsin of the pancreatic juice and by the erepsin from the intestinal walls. Thus the protein and the proteose are converted into still simpler products. But recent investigations have shown that protein is not merely converted into proteose and peptone, but is yet further acted upon by the digestive juices, in order that the breaking down can lead to the formation of the polypeptides and the mono-amino and di-amino acids.²

The proteoses and simpler products when injected directly into the circulation, are usually quickly eliminated by the kidneys, but seem to be toxic, seeing that they tend to inhibit the coagulation of the blood and have a lymphagogue effect. A fall in arterial pressure is also a result, as well as a febrile reaction, while large doses in animals may even cause death.³

Diseased conditions of the bowel which lead to increased intestinal putrefaction, usually show an increase of indican skatol and phenol. If indican is present in the urine it signifies that there is protein putrefaction in the bowel.⁴

When there is decreased acidity of the stomach an increase of aromatic substances in the urine is often discovered. From these findings it would appear that the protein had not been sufficiently digested by the secretions in the small intestine and consequently an increased amount of protein reached the large intestine where it formed an increased quantity of indol, skatol, phenol and cresol. Toxic action of bacterial or other poisons upon the nervous system is admitted and it would be illogical to admit such action and exclude that of their originators on the local joint structures.

Metchnikoff has pointed out that the constant production and absorption of toxins from the intestine is one of the important causes of loss of resistance on the part of the body to the changes which bring on senescence and death.

R. Pemberton⁵ is of the opinion that arthritis, for clinical purposes, at least, seems to belong in the category with diabetes and gout, in that there is in each case a limit of toleration of carbohydrates on the one hand, and proteids on the other.

In a paper written by me which appeared in *AMERICAN MEDICINE*, November, 1912, I showed that protein, as such probably absorbed into the blood stream, caused headache and other disagreeable symptoms. Another point to which I drew attention in the same paper was that the poisoning of the body might not be caused by toxins in the true sense of the word but by relatively simple chemical substances, certainly not of

a more complex nature than many of the alkaloids, for example, many of the amino-acids which are found in the circulation are not toxic but if they persist in the intestinal tract and are then acted upon by the fermentative or putrefactive bacteria, more or less active poisons are manufactured which give rise, if absorbed, to severe toxic symptoms. It is quite in the order of things therefore, to assume that undigested protein and protein absorbed as such may give rise to arthritic manifestations. Lane thinks that when these products or the products of their conversion exist in excess in the circulation they produce degenerative changes in every tissue and in every organ of the body while the rheumatoid cases show the most abrupt and conspicuous changes following within a few days and in some cases even a few hours an ileocolostomy.

Digressing somewhat from the consideration of rheumatoid arthritis as a disease of disordered metabolism, produced by the failure of an internal secretion to perform its allotted duty, it may not be out of place to briefly discuss the effect of exposure in the causation of muscular and joint rheumatism. It appears fairly obvious that cold damp weather is partly responsible for the outbreak of acute manifestations of muscular and joint rheumatism. Indeed, so much proof that this is so, can be adduced that it may be taken as proven beyond peradventure. The statement may then be made that among the causes which operate directly in the development of rheumatoid arthritis, damp and cold hold a prominent place. It will, however, be generally noticed that when such factors are brought forward as causes of the attack that there has been some predisposing condition of lowered general health, the presence of which was probably an essential element in bring-

ing about the result. Therefore, this much may be said, that cold and damp are fruitful causes of rheumatoid arthritis, only in the sense in which other causes act as depressants to local and general vitality. It is more than likely that a chill acts rather as an aggravator of the symptoms after the disease has already been developed, than it has in exercising a causative influence prior thereto. The late Professor Charcot held the view that a combination of damp and cold was the most potent cause in the development of rheumatoid arthritis. In the case of a condition of chronic intestinal stasis with intestinal putrefaction, and when perhaps the mucous lining of the intestinal tract has become abraded by the constant chafing of hard lumps of fecal matter, poisons may obtain an easy ingress into the circulation, producing auto-intoxication and a general lowering of vitality. In consequence, a vicious circle will have been formed, the defensive powers of the system will have been diminished or broken down leaving it open to the attacks of the toxic agents present in the blood stream. First, the vital powers of the body are lowered by the action of the poisons permeating it, leaving it defenseless against the inroads of these same poisons; the exposure to damp and cold is the exciting cause of rheumatoid arthritis, and supplies the last link in the chain of the vicious circle. Still it should be well understood that there must be a predisposition or susceptibility to rheumatoid arthritis or no exciting agents would produce this particular form of diseases. Thus again the primary exciting cause of the disease, arthritis, or whatever it may be, is an inadequacy, insufficiency or lack of an internal secretion concerned with the alimentary tract, of which that of the pancreas is the chief.

I wish to lay especial stress on the point that the majority of clinical cases of rheumatoid conditions seen by myself and colleagues, in my opinion are not due, strictly speaking, to infection, but arise from some chemical change in the blood stream. The chain of happenings appears to me to be somewhat as follows: *First*, digestive disorders, with or without constipation, in the large majority of cases accompanied by constipation; *second*, chronic intestinal stasis, frequently of a mechanical origin; *third*, alimentary toxemia, which eventually may permit of the entrance of undigested proteins or proteins as such into the circulation, resulting in a chemical poisoning of the system with the sequela of rheumatoid arthritis or of other diseases or affections to which the individual is especially prone.

The physiology of digestion and the part played therein by the internal secretions, that is to say, as far as has been accurately ascertained, has been discussed so frequently and exhaustively, of late, that it would be supererogatory to dwell upon this phase of the question at length.

The role, however, of the pancreas as the chief aid—through the digestive ferments secreted by it—in the completion of terminal digestion of the protein and carbohydrate group, is sufficiently important to deserve consideration.

Starling has pointed out that the digestive action of pancreatic juice on proteins was first observed and discussed by Coirvasart some considerable time ago, but it was not until a comparatively recent date, that it was demonstrated that pancreatic juice in itself exerts no proteolytic effects and that in order to develop this power the juice had to be changed, trypsinogen into trypsin. The action of entero-kinase performs this service, and thus the pancreatic

juice gains a proteolytic activity greater than the other digestive juices and by its agency the proteins of the food are thoroughly disintegrated. In a former paper I have pointed out that the pancreas is the gland of which the secretion is known to have the most power in breaking down the carbohydrate group. The saliva and pancreatic juice contain a diastatic ferment capable of changing the molecular cohesion of starch into maltose as an end product, and in some of the herbivora an enzyme capable of attacking cellulose—which has not been definitely isolated in the human being—has been demonstrated.

In fact, on the carbohydrates the action of the pancreatic juice is just as strikingly evident as upon the proteins. The amylolytic ferment, known too as pancreatic diastase, exerts a strong digestive action on such products. The stages in the hydrolysis of starch brought about with pancreatic juice are exactly similar to those effected by ptyalin.

According to Starling if the juice be neutralized, it is found that the process of hydrolysis goes on to the formation of dextrose or glucose. This further conversion is due to the presence in the juice of a second ferment, maltose, which converts the disaccharids maltose into the non-saccharid glucose. The juice in the gut is therefore able to affect the further digestion of the products of salivary digestion. On the other disaccharids pancreatic juice is without effect. It contains no invertase, nor does it, in spite of certain statements to the contrary ever contain lactose. It has therefore no effect upon cane sugar or milk sugar. The digestive ferments secreted in the pancreas are the most important factors concerned in the terminal digestion of the proteins and carbohydrates and therefore when

these are not working smoothly, are, to a great extent, responsible for disordered metabolism with consequent poisoning of the system followed by affections and diseases of various kinds, including rheumatoid arthritis.

A fact well worthy of note, and to which as far as I am aware little attention has been paid, is the great prevalence of chronic intestinal stasis in women and the much greater frequency of rheumatoid arthritis among females. Garrod has shown by statistics that rheumatoid arthritis is many times more common in women than in men while it is notorious that chronic intestinal stasis occurs with greater frequency by far in the female than in the male sex. This must be more than a coincidence and seems to point clearly to the impression that the reason why women are so much more liable to muscular and joint rheumatism than men, is because suffering greatly from intestinal putrefaction they contract alimentary toxemia, their system becomes charged with chemical poisons and in many instances rheumatoid arthritis is the result, seemingly going to show that such poisoning is responsible for rheumatoid arthritis.

The object of this paper then is to endeavor to make out a case for chronic intestinal stasis and alimentary toxemia followed by chemical poisoning of the system as a cause of rheumatoid arthritis. Also to demonstrate as clearly as may be, that the failure of an internal secretion concerned with the digestion, and especially that of the pancreas is a main factor in the result. Clinical evidence in many instances appears to bear out the view that rheumatoid arthritis is caused to some extent, at least, by chemical poisoning of the system and if this can be clearly proven, the deduction that internal secretions of the ali-

mentary tract and the internal secretion of the pancreas in particular play important roles in the outcome, is obvious.

Conclusions.

1. It would appear that undigested protein and protein as such, may gain an entrance into the blood stream, by reason of a condition of chronic intestinal stasis resulting in alimentary toxemia.
 2. Such protein exerts a toxic action poisoning the system, lowering vitality and in some instances being a cause of rheumatoid arthritis.
 3. The poisoning of the system by these means is a chemical poisoning, a point of considerable consequence.
 4. The internal secretions of the alimentary tract and that of the pancreas in particular, play an important role in the production of intestinal putrefaction and accordingly, if this condition results in rheumatoid arthritis, the intestinal secretions and especially that of the pancreas are indirectly responsible for these joint manifestations.
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Constipation.—Constipation is quite common in breast-fed infants, and is usually due to the child's getting a minimum amount of food or a milk that is low in fat and generally high in protein. Orange juice well sweetened may be prescribed in doses of a teaspoonful to a tablespoonful before nursing with splendid results.—*Med. Summary.*

RHEUMATISM AS A FACTOR IN THE ETIOLOGY OF LESIONS OF THE SKIN.

BY

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The mischievous meddling of the rheumatic toxemia with the heart pleura, throat, eye and ear, has been thoroughly investigated and recorded. We are in a position to assert that definite lesions of these various organs, are due to the rheumatic active agent, whatever that may be. But with regard to the skin this idea has not been developed commensurately. Yet it is susceptible of demonstration that the skin is as liable as any other structure to the untoward results of such systemic vitiation. Immediately upon the suggestion of rheumatism the medical mind reverts to purpura rheumatica. Every physician recognizes this for what it really is. It is properly catalogued whether it be accompanied by arthritis or appears alone. These mysterious subcutaneous hemorrhages have been associated with rheumatism, frank or covert, with such invariable persistence that the accumulated evidence is overwhelming. Whether punctate, nummular, or crayoned in large, geographical figures on the skin, their recognition is equally assured.

The connection between erythema multiforme and rheumatism is not at first glance, so obvious. Yet a little experience, rightly interpreted, will reveal gradation cases, forging the bond of etiology. Let us call to mind the patient with acute articular rheumatism, erythema bullosum, and large purpuric splotches all at the same time. To offset the objection of accidental associa-

tion, it may be added that some of the bullae were hemorrhagic. There could be no doubt whatever that the whole picture was of a piece. First appeared the swelling of the joints, then an erythematous flush, interspersed with bullae of many shapes and sizes, and followed quickly by the extravasation. Anticipating the contention that the symptoms referable to the skin may have been caused by the medicines taken for the arthritis, it is pertinent to remark that no medication whatsoever, beyond a dose of salts had been given until the terrifying outbreak on the skin. Rheumatism is very lightly esteemed by the average patient, unless atrociously acute or alarmingly prolonged, and it is apt to be neglected, or unskillfully tinkered with, until discouragement or some mystifying complication arouses the fear of disaster.

The name of Schönlein's disease has been given to such a clinical picture as I have drawn. Its rheumatic etiology has been occasionally disputed, but it is unquestionably a combination of rheumatic purpura and erythema bullosum. Likewise it is noteworthy that the cutaneous lesions are largely local and in the neighborhood of the affected joints, and that the medication most effective is that for the arthritis element. Conceding the rheumatic etiology of the foregoing syndrome, we are logically carried to the conclusion that erythema multiforme is similarly engendered. Erythema bullosum is but an extreme manifestation of erythema multiforme. The irritation of heat, will, if applied to a certain degree, produce an erythema. If augmented, it will produce a blister. So the irritant which is acting through the medium of the circulation, will under given conditions produce the ordinary papulo-erythematous lesions of erythema multiforme. Under other conditions

of aggravated acerbity it will excite an outpouring of serum in the form of blisters or bullae. It is confirmatory of the adduced etiology of this peculiar dermatosis that it is nearly always possible to elicit a history of preceding or concomitant arthralgia.

Granting the rheumatic etiology of erythema multiforme it is reasonable to account for urticaria in the same way. They are cousins german, these two. It is difficult at times to tell which is which. Lamely enough, we are often forced to decide by the circumstances of pruritus. If it itches we call it urticaria; if not we call it erythema multiforme. While we may be reluctant to admit a common paternity I think we are constrained to admit a common lineage.

Angioneurotic edema, being but a variant of urticaria, must be attached to the family tree. Its genealogy cannot be denied. It is legitimate and leal. *A posteriori* evidence of this can be found in its occasional diversification of the clinical *melange* just described as Schonlein's disease. Edema of the limbs, sudden capricious and unaccountable, is sometimes a marked and disquieting feature of the problem. We are prepared for the objection that angioneurotic edema is of intestinal origin; that it is a consequence of our everlasting and apparently omnipotent auto-intoxication; and that the implication of rheumatism is entirely gratuitous and supererogatory. It is only necessary to reply that we consider rheumatism a phase of faulty metabolism, having its inception in that sluggish swirl of pangenetic putrescence. It is all the same in the summing up, whether two and two make four or whether one and one and two make four. It is all one whether we account for angioneurotic edema directly by intestinal putre-

faction, or by the intermediation of rheumatism due to intestinal putrefaction. The invocation of a micro-organism in the etiology of rheumatism makes no material difference in the situation, for either its origin or its opportunity is in the gruesome gut. It may be asked why we interpose rheumatism if the primal cause and necessary condition are intestinal toxemia? For the reason that this same intestinal toxemia gives rise to many different clinical entities, which after their elaboration and exploitation, demand widely different therapeutics. One patient from the same source will acquire a leaden languor; another will develop the equivocal distinction of acne rosacea; another will drowse along into the stupor of typhoid fever; another will be piebald with alopecia areata; another will be gnarled and twisted with rheumatoid arthritis; another will be splotted with "uterine" cloasma; another will be encuirassed in invoried scleroderma; another melancholy mad with fanciful misfortunes; another furiously distraught with periodic headache; another prone and helpless with inflammatory arthritis; sooth to say this bubbling brew of stagnant sewage gives rise to most the ills that flesh is heir to or serves as a melting pot for the transmutation of the noxious elements into the varied and specific pathological principles that we recognize under so many different titles. But the transmutation once effected we have a very different problem from the simple sweeping out of the pestilential puddle. We have to meet the invader in the circulation, hemic and lymphatic, where he multiplies amazingly; and fight him with the means approved by reason and experience. A typhoid once established, it is not sufficient to evacuate the bowels. The bacillus having passed through that clearing house,

has acquired an independent footing in its ill-starred host and vigorously pursues its campaign of devastation. It is a fight to a finish; the finish of the victim or the germ. The *status rheumaticus*, the rheumatic diathesis, the susceptibility to rheumatism, or the condition of acidosis, once made manifest will never be controlled by simply sluicing the offending cess-pool. Assistance will be rendered by this process of elimination to be sure, but specific medication will be needed to counteract the constitutional dyscrasia. So while we may be prepared to admit with Sir Arbuthnot Lane and Dr. Bainbridge that the intestinal tract is the *fons et origo* of most of the causes of disease, from hives to diabetes, still we must contend that the evil process having been launched into the system demands something more for its suppression than intestinal "*anastasis*." Thus it is wise to recognize not only the original source of a disease but its association with other circumstances that have modified its manifestations, influenced its therapeutics and qualified its prognosis. Even the mysterious abnormalities of the ductless glands so lucidly and masterfully set forth by Sajous in his articles on haemadenology are capable of interpretation in terms of intestinal toxemia, and yet how different is the finished clinical picture and its practical manipulation from the simplicity of its origin.

Erythema nodosum is a lumpy pinkish infiltration of the tissues about the tibia. The individual lesions may be as small as hazel-nuts or as big as walnuts. They may be few or many. They hurt. They have been ascribed to latent rheumatism, and all the probabilities bear this out. There will be a history of rheumatism, or of irregular fleeting muscular pains and the salicylates

are decidedly effective. In point of fact no other form of medication has the slightest influence. As in purpura rheumatica the obvious association has been generally recognized.

The pathology of herpes zoster is determined. Its etiology is in doubt. It is unquestionably a neuritis; an inflammation of a posterior nerve root involving both sensory and trophic filaments. A micro-organism has been suggested to account for it, a rather pretentious agency for so trifling a malady. It has been attributed also to various chronic lesions of the cord such as gliomata, myelitis, tabes and general paralysis of the insane. But we are not concerned with these symptomatic varieties but with the so-called idiopathic zoster which stands alone and after a well defined period of anguish, disappears utterly and as a rule for good. The liability of rheumatism to pick out a single joint, a single tendinous attachment, a single cardiac valve, is highly illuminating in this relation. It is just as reasonable to conceive its attacking a single nerve root as the attachment of the sterno-cleido-mastoid muscle for example and producing wry neck. If it is maintained that shingles is of infective origin the same is maintained of rheumatism and the cause may be the same. It is objected that shingles does not recur and rheumatism is contrariwise reputed. This is disposed of by two replies. *First*, shingles does occasionally recur. *Second*, erythema nodosum rheumatica by practically unanimous opinion, recurs with great infrequency. Also it is established that rheumatism which now attacks the joints with active inflammation, may on another occasion attack a sciatic nerve, and on still another occasion attack the fibrous tissue of the heel. It is possible, that in the

variation of its line of assault, it may swerve to concentrate upon a posterior nerve root. The salicylates are helpful in the relief of pain.

Regarding exciting causes of herpes zoster, they would seem to be pretty nearly identical with those of actual rheumatism. Dampness, cold and sudden checking of the perspiration, would appear to be operative in both instances. While the etiology of herpes zoster has not been demonstrated enough it has been adduced to show the plausibility of the rheumatic hypothesis. This gives a practical working basis for the enlightenment of the patient and the application of treatment.

Intertrigo is a common cutaneous condition usually accorded scant attention by the medical adviser. It is so manifestly the result of the friction of two opposing surfaces that there is nothing left to say. But on reflection is it not significant that every pendulous breast is not affected nor every obese abdomen? Nor every bulging buttock?

It is not a fact that the distressing dermatosis is found in individuals who are not only fat, *but exude a sour perspiration?* Or in individuals such as babies who are repeatedly soiled with macerating urine? The majority of cases among adults will be among those blubbery, gross, evilly smelling females, with dirty tongues and pasty faces palpably the product of indolence, gluttony and beer. The intestinal cess-pool is full to overflowing and all the conditions favorable for the evolution of the rheumatic diathesis. The sour perspiration is proof enough of the nutritional aberration summarized under the title acidosis. Support is found in the fugitive neuralgias, muscular stiffness and *ardor urinae* that complicate these cases. The difficulty of

curing this dermatitis resides in the failure to recognize the underlying provocation. External remedies either disappoint us utterly or yield a scanty grudging and transitory result. It is as if we were steadily applying an irritating lotion to the affected area and then attempting to counteract it by a soothing one. The acrid product of the sweat glands incessantly poured out upon a surface from which there is little or no evaporation (because of the overlapping tissues) moils and broils and maims the epidermis and no line of treatment that overlooks this vital consideration will ever get to the root of the difficulty. Drain the cess-pool. Prevent its replenishing. Eliminate by proper diet the pathological plethora of the overfed tissues and finally and most importantly alkalinize the acid product of distorted metabolism. Then you will find your epidermis enduring without reaction the presence of a normal perspiration. This may be a great deal to do about an inconsiderable affliction. But viewed as an index of systemic derangement it is decidedly worth while.

The subcutaneous nodules that so clumsily distort the distal joints of many aching fingers are the analogue of the nodules that distort the leaflets of the mitral valves and cause regurgitation. They present themselves in the experience of every practitioner, and are properly accredited as a rule. They are a manifestation of that fibrositis already mentioned. They indicate a severe infection. They are said to be local effects of the growth of the organism whereas the toxins are responsible for the fever, the arthralgia, the acute cardiac dilatation, the nervous phenomena and erythematous. These nodules are not confined to the extremities of the small bones. They may invade the tendon sheathes and fascia

anywhere. Too much emphasis can not be laid upon this phase of the subject because of the likelihood of minimizing the importance of these out-growths and forgetting their association with serious cardiac involvement.

The nails of those with the rheumatic diathesis are apt to show it pretty plainly. They are extremely brittle and split upon the slightest resistance. They are marked with longitudinal striae and the cuticular fold is ragged and worn. For a considerable period no other hint may be afforded of the nutritional instability of chronic rheumatism, when quite unexpectedly, an attack of lumbago, sciatica, or arthritis will "bell the cat" and clarify the whole situation.

I am reminded to mention the subungual pulse which, while not a direct symptom of rheumatism, readily suggests it by disclosing aortic regurgitation. It is marked by a rapid flux and reflux of the blood in the nail bed corresponding to systole and diastole. With the stroke of systole the capillaries are suddenly distended, with the rebound of diastole they are as speedily emptied because of the leak under the aortic column.

Pityriasis rosea with its oval and circular plaques of fawn and salmon-pink, and its delicate crinkly scales upturned, a little within the margin, into a tiny collarette that is quite distinctive, is looked upon by many as of rheumatic origin. Others maintain that it is purely parasitic. The Germans entitle it "herpes tonsurans maculosus." No organism has been isolated. It is noteworthy that treatment by the salicylates is usually effective whether supplemented by external applications or not. This is not an attempt to prove the etiology of this peculiar disease. It is included in

the summary simply because of its singular reaction to antirheumatic medication.

Sudamina, the minute glistening vesicles of retained perspiration, are very frequent in rheumatic subjects especially after the drenching activity of the glands so noticeable in the acute exacerbations. While occurring in other conditions they are quite characteristic in this, and are fairly attributable to the acrid quality of the secretion. For let us not forget that the sweat of the rheumatic is sour. This eruption often ends in slight desquamation. Sometimes the desquamation leaves a rawness of the surface that may in favorable situations eventuate in intertrigo. Recall that we essayed to show above that intertrigo was dependent on more than the apposition of two cutaneous surfaces. A punctate dermatitis is frequently produced at the mouths of these overstimulated sudoriparous glands which may terminate in a pretty fair imitation of eczema. I hold no brief for the rheumatic etiology of eczema. Beyond the fact that it is a dermatitis always due to an exciting cause whether that cause is external such as water, dyes, lime, etc., or internal such as the products of faulty metabolism circulating in the blood, I know nothing about the etiology of eczema. But I think it is a perfectly reasonable argument that a skin whose own secretion is capable of arousing a dermatitis is certainly more apt to respond to the external irritants that are usually accessory thereto. Note how whisky, wine, beer and sweets are injurious to the rheumatic. Note how whisky, wine, beer and sweets are taboo in eczema. Note the benefit from the alkalies in both conditions. All this may be purely coincidental. Except in instances where occupation is directly provocative, note the dirty tongue and evil exhalations of the chronic

eczematic. This may only mean that the fetid flood is rising in his impotent intestines, inundating his lymphatics, fouling his hemic circulation, and sweeping to remotest tissues toxins known or undetermined. Or it may mean the irregular expression of the rheumatic toxemia, whose bacillus is bowel-born, bowel-bred, or fortified with opportunity. This is no fanciful lucubration. Neither is it an attempt to drag in by the heels an unwarranted conclusion. It is a fair and reasonable presentation of a topic on which there is much uncertainty.

In the acute febrile stage of inflammatory rheumatism the exposure of the surface will induce a sudden transitory erythema of a very superficial type. It indicates an instability in the cutaneous circulation. This may even take the papular or circinate form well defined, but lacking density.

Erythema scarlatiniforme, so frequently confounded with true scarlet fever, is apt to be accompanied with pain and tumefaction of the joints. The rheumatic complication of true scarlet fever comes into rather curious parallel with this. For a moment the pictures are very much alike. The milder affection may even intensify the doubt by terminating in desquamation. Some elevation of temperature is not unusual. There would appear to be two agencies capable of reproducing the clinical phenomena of scarlet fever with arthritis, one of which is decidedly less virulent than the other. There are doubtless many agencies capable of reproducing the clinical phenomena of articular rheumatism. True idiopathic rheumatic fever (whatever that may be) is one. Tonsillitis is another. All sorts of pyogenic infection are others. These include infections of the mouth, ear, gastro-intestinal and genito-urinary tracts.

Pyorrhea alveolaris is credited on trustworthy testimony with this calamitous result. Equally competent observers have ascribed to it the hideous and hopeless distortions of rheumatoid arthritis. It seems to be a pretty small focus from which to develop such stupendous consequences, but the process is an illustration of the remarkable condition known as anaphylaxis, wherein repeated small doses of infection wear down immunity and achieve the most startling surprises. Chronic otitis media and chronic gonorrhea, have similarly distinguished themselves.

It is undeniable that the common factor in the evolution of these variously engendered rheumatic manifestations is the absorption of certain toxic materials and the poisoning of the body tissues. It is probable that the commonest source of supply is the intestinal tract. It is debatable whether this poisoning is effected through the intervention of a micro-organism (as is generally accepted today) or whether it is the result of faulty metabolism grounded on improper feeding. The trend of opinion is ever towards the acceptance of the micro-organism in all pathological etiologies. But if we read the masterly treatise of Joseph E. Winters, on rheumatism, we cannot but be a little shaken in our conviction. Biological chemistry according to him has all to do with the problem. It is one of metabolism pure and simple. The vicious elements of disturbance are animal proteids and sugar. The remedy is abstinence from both. After a painstaking study of that erudite exposition one will not be so glib in prating of micro-organisms.

However, be the essential cause what it will, the immediate consequence is intoxication. This is acid. The sweat of the rheumatic is acid. So is the saliva. His

blood is not. There is no such thing as a sustained acidemia. It is incompatible with any but the briefest existence. Note the speedy destruction of life following carbolic acid poisoning. It is not due to the burns. They have not had time to be a factor. It is due to the destruction of the blood from the presence of an unneutralized acid. But while there is no such condition as an acidemia (aside from the fatal exception noted) there is a tendency to the development in the tissues of acid in excess of their ability to promptly neutralize. This is known as acidosis. This term while very convenient is not strictly accurate because it means an acid condition whereas we are seeking to describe an acid tendency. Sooner or later the neutralization is accomplished; or startling pathological results are observed. Long continued abnormality will be fatal. This idea is based on the colloid theory of water absorption. All the cells of the body are of colloid material. This swells in the presence of acid by absorbing water from its nearest source. When the acid is neutralized the cell gives up its excess water and resumes its normal size and function. The various alkalies and salts serve to accomplish this purpose. They dehydrate the swollen cells and bring about a resumption of activity. The consequences of this swelling of colloid tissue are diseased conditions of great variety, depending on the properties of the organ or organs attacked. If the kidney cells swell there is diminution of urine speedily accompanied by the evidences of tissue destruction in the form of albumen and casts. Acid solutions dissolve colloid material and as the water is released from its combination with the cells a certain amount of destroyed parenchyma is washed out. If the medication or the restorative efforts of

nature are capable of eliminating all the acid there is absolute resumption of function and a definite cure with a more or less reduced bulk of effective tissue. But as the kidney is four times as big as the actual needs of the economy it is plain that such damage may be sustained without a noticeable impairment of health.

An excessive production of acid in the brain induces the headache, somnolence, coma and convulsions characteristic of uremic states. The older clinicians with the happy faculty of "hitting it right" despite the meagerness of their implements, denominated this pathological picture "wet brain." It is not due to the condition of the kidneys; both conditions are due to the same cause namely the excessive production of acid at the point where the edema is in evidence. Pulmonary edema is similarly explained. Glaucoma likewise. And incidentally edema glottidis. This doctrine of the swelling of colloids under the influence of acid irritation, throws a strong light on the manner of the production of many rheumatic phenomena. Rheumatism is an acidosis. As already mentioned the sweat and saliva are acid. The urine is intensely so. The joint effusions exemplify the absorption of water by colloid tissue, and the yielding of a weak colloid solution after a more or less prolonged persistence of this edema. This is known as syneresis. The serous membranes generally are possessed of this property, under the stimulus of acid irritation. Witness the tendency of the pericardium to become involved in rheumatism and distend with a marked effusion. Witness the frequency of pleuritis similarly excited. Delirium convulsions, and coma indicate swelling of the cerebral membranes, the exact reproduction of the "wet

brain" described in alluding to nephritis. The fugacious edemas commonly known as angioneurotic are simply local swelling of colloid tissue responding to local accumulations of acid. The erythemata nodosa are practically the same thing in a more restricted area and a little more accentuated degree. The fibrous nodes that appear about the joints and in the sheaths of the tendons and are attributed to fibrositis, are probably an advanced and permanent consequence of colloid distention.

Purpura would seem at first glance rather a difficult phenomenon to explain from the standpoint of colloid chemistry. The older doctrine of diapedesis presupposed stomata in the walls of the vessels, and an increased propulsive force from the blood stream to drive the corpuscles through. Under the colloid hypothesis the blood vessel walls being colloid material swell and soften under the influence of acid production and permit the migration of the temporarily denser corpuscle. Rheumatism furnishing the acid provocation, it is not surprising that purpura is often a conspicuous complication.

Urticarial wheals are a classical illustration of the colloid swelling due to topical acidulation. Note the rapid turgescence following a bee sting. The trauma is trifling but the acid secretion of the bee excites a tremendous reaction. The colloid tissues extract water from the circulation in obedience to the laws of their being and we witness the almost instantaneous tumefaction. The stings of all insects act in the same way although not to the same degree. The bullae that appear in erythema bullosum are an exaggeration of the process of hydration under the stimulus of an acid. The characteristic oozing of eczema (whose colloid composition is manifest in its

"gluey" feel and its faculty of stiffening linen), strengthens the probability that we have to deal with the results of an acid toxemia. As I have already said I hold no brief for the rheumatic etiology of eczema. But lacking a satisfactory explanation of the occurrences grouped under its capacious title, it will not be amiss to consider the pre-tensions of rheumatic acidosis.

Having exhausted the arguments based on theory and analogy for the position assumed in this discussion, let us see what may be elicited from a consideration of treatment. The trite old truism that "the proof of the pudding is in the eating" is strongly sustained by the evidence thus obtained. It might be called without levity putting the problem to the "acid" test. Some hint of this has already been given but emphasis demands elaboration.

It is generally conceded that in acute articular rheumatism abstinence from animal food and the ingestion of alkalies form no inconsiderable part of the rational management. The salicylates relieve pain and reduce temperature *but do not cure*. The benefit is apt to be extremely brief unless other means are employed. Furthermore the salicylates will not prevent the cardiac complications no matter how daringly they are pushed. But under a milk diet with alkalies and the salicylates prompt and lasting and uncomplicated results may be expected. This method recognizes the acidosis and counteracts it. It is unimportant whether we ascribe the acidosis to faulty metabolism or to a micro-organism. Either is capable of producing it. The grave consideration is the recognition of the existence of this evil state and its powers of destruction. In less acute conditions it may not be necessary to enforce such a rigid regimen, but the acid forming animal pro-

teids and alcohol must be inflexibly excluded.

The acid intake being thus restricted the acid output may be decidedly accelerated by the administration of the alkalies, and various neutral salts. With the elimination of the acid factor the tissues resume their normal attitude to the body fluids and the manifold manifestations of rheumatism disappear.

It is the delectable habit of the physician of the day to review with a pitying toleration the opinions of his benighted predecessors, groping along without the marvelous biological and mechanical discoveries that have been the precious portion of this generation. It is incredible that they ever could have accomplished anything worth while, with nothing but their brains to guide them! No Wassermann! No luetin! No Widal! No blood count! No lumbar puncture! No spirochete! How did they ever find out what was the matter with a man? It will be rather disconcerting to our splendidly equipped clinicians to learn that despite all these lamentable lacks those men of yesterday were in the possession of many weighty truths which are receiving confirmation under the guise of novelties today. Among other rediscoveries this one of acidosis was perfectly understood by them. They did not grasp perhaps the biological chemistry that proves their case but they knew that there was an acid at the bottom of the trouble and they had a clear and correct comprehension of the treatment. They gave alkalies in nephritis, in rheumatism, in eczema, and in combination with their tonics. Their sulphate of magnesium, their tartrate of sodium and potassium, their acetate of potassium, their sodium bicarbonate, labored for them, not better than they knew, but better than they understood.

With the neutralization of the acid in the tissues, they struck at the root of more diseases than they had the label for. They had hit upon the grand pathological generalization of "modern" medicine—acidosis.

GONORRHEAL RHEUMATISM.

BY

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Gonorrheal rheumatism, or more correctly speaking, gonorrheal arthritis, is a common, and always serious complication of gonorrheal infection. The disease occurs in both men and women, but is most frequently observed in the former; in some cases it accompanies every attack of specific urethritis, but in others only one.

While, in the majority of cases, in both sexes, it follows gonorrheal invasion of the urethra, it may also complicate a gonorrheal ophthalmia, iritis, vulvo-vaginitis or gonococcic infection of other structures. This complication may occur at any time of life from infancy to old age.

In men it usually occurs between the twentieth and fortieth years. The exciting cause of the disease is the gonococcus and its toxins, which gain access to the general circulation, and are thus carried to the joints from some local focus of gonorrheal infection.

In the acute cases when the joint-effusion is serous or serofibrinous, the gonococcus can usually be found in the exudate of the affected articulation.

In the subacute and chronic cases, however, when the exudate is seropurulent or

purulent in character, the gonococcus is very rarely if ever found, as we are now dealing with a mixed infection, in which we find a large variety of organisms among which may be mentioned the staphylococcus, streptococcus and occasionally the colon bacillus. A single negative examination, however, is not sufficient to settle the diagnosis, as a second or later one may reveal the presence of the gonococcus.

It is very difficult to state, definitely, how often gonorrheal arthritis complicates gonorrheal infection.

The figures given by different investigators vary between one and ten per cent.

It should never be forgotten that the diagnosis of gonorrheal rheumatism is frequently overlooked, many cases being recorded as chronic rheumatism, rheumatoid arthritis, arthritis deformans, rheumatic gout, etc., so that the proportion is probably much higher than it would at first appear to be.

The examination of any given case of arthritis, therefore, should never be considered complete without a careful investigation of the patients' history for previous gonococcic infections and a thorough search for the presence of urethritis, vesiculitis, prostatitis, salpingitis, or vulvo vaginitis.

In males the gonococci usually enter the circulation from the deep urethra, prostate, and seminal vesicles.

It is extremely doubtful whether infection of the joints ever complicates a purely anterior urethritis.

In women the articular involvement usually follows a gonorrheal endometritis, or salpingitis.

Trauma and previous rheumatic or gouty affections of the joints are predisposing causes.

Under trauma we must include not only

direct injury to the articulations, but also rough or unskillful treatment of the urethral tract, such as the irrigation of the urethra, and bladder by hydrostatic pressure after the example of Janet, or by the large hand syringe, whereby fluid is forced through the compressor muscle to the deep urethra and bladder.

The passage of sounds, urethrascope or rigid instruments in the acute stage of the disease and the use of unnecessarily strong and irritating injections must also be included under this heading, as any of these procedures may cause the gonorrheal process to pass rapidly into the deep urethra, prostate, and seminal vesicles.

The invasion of the joints is most likely to occur during the first few weeks of an acute urethritis, but it may take place at any time and in any stage of the disease.

None of the articulations are exempt from attack, but certain of them appear to be more liable to infection than others.

In order of frequency those most often involved are the knee, wrist, ankle, finger and toe joints, elbows, hips, shoulders, temporomaxillary, and sternoclavicular articulation.

It is worthy of note that temporomaxillary arthritis is much more frequently gonorrheal than not, and that its occurrence should always lead us to suspect a Neisserian infection.

The number of joints involved at one time is usually two or three, but infection of more than this number is not infrequently observed, especially when the smaller articulations, such as those of the fingers and toes, are affected.

The onset of the disease may be either gradual and mild or sudden and acute.

In the former type the objective symptoms are few, at first; the patient usually

complaints of pain in one or more joints, which is at its worst in the morning, on arising, and accompanied by more or less stiffness of the affected articulations.

As the patient moves about the pain and stiffness diminish and later in the day may even disappear completely, not to return until the next morning.

The pain may be sharp and shift from one joint to another, or it may be dull and stationary.

In many cases only one joint at a time will give symptoms; but it is also common for several to be involved at once.

While at first there is little, if any, change in the external aspect of the part, sooner or later, if the process goes on unchecked, external evidences of inflammation begin to appear; there is more or less effusion into the joint cavity, redness, heat and periarticular swelling and tenderness.

Fever is rarely a prominent symptom in these cases, unless an exacerbation occurs when the picture changes to that of the second or acute variety.

In this type, which may appear suddenly without warning, or which has been preceded by some of the symptoms described above, there is a severe, acute arthritis, appearing suddenly, with extreme pain and a temperature which may reach 102°-103° F. degrees or more.

The joints involved are exceedingly painful, hot, and swollen, and their function is completely lost.

The skin is red and tender, and there is a marked and rapidly increasing effusion into the articular cavity.

This type, which in many of its aspects, closely resembles acute rheumatic fever, rarely resolves completely, in the manner so characteristic of the latter disease, and exhibits also, as does the variety first des-

cribed, a marked tendency to result in more or less fibrous ankylosis of the implicated joint or joints.

The fluid obtained by aspiration is usually serous and contains gonococci.

Rarely it may become seropurulent or purulent, but this is usually a sign of the occurrence of a mixed infection, (staphylococcus, streptococcus, etc.).

Whether the onset of the disease belongs to the first or to the second of the types above described, a common and distressing result is the appearance of a stubborn, persistent hydrarthrosis, lasting in many cases for weeks or even months.

The knee is the articulation most likely to be thus implicated.

Occasionally both knees are affected, but unilateral involvement is more frequent.

The condition is characteristically stationary and resistant, as compared to acute rheumatism, where the inflammation shifts from joint to joint.

In those cases in which the gonococci attack the smaller articulations the condition often closely resembles a polyarthritis deformans. The joints of the carpus and tarsus and those of the fingers and toes are the ones most commonly involved, especially the interphalangeal articulations, in which case the inflammation often results in the formation of the typical "radish finger" of the French authors.

Atrophy of the muscles in relation to the affected joints is common, with an accompanying falling of the arches, when the feet are involved.

The diagnosis is to be made on the existence of an uncured gonorrhea, and the finding of gonococci in the secretions from the urethra, prostate or vesicles; the small number of joints involved, the chronicity of the disease with evanescent exacerbations.

tions, the extreme tendency to ankylosis, the presence of a positive complement-fixation test for the gonococcus, and the characteristic resistance to the usual antirheumatic remedies.

In passing, it is well to mention, as frequent accompaniments of gonorrheal arthritis, tenosynovitis, myositis, especially of the muscles of the neck, back and forearm, and bursitis, most often affecting the bursae about the tendo Achilles and os calcis.

Isolated patches of periostitis especially of the os calcis and vertebrae are also occasionally observed.

In considering the treatment of gonorrheal rheumatism it must never be forgotten that, no amount of local joint treatment will of itself be of any avail unless we attack, coincidentally the local foci of infection whence fresh supplies of gonococci are continually fed into the general circulation.

It is therefore imperative that the urethral tract and the glandular structure in anatomical relation with it should be carefully examined, and that urethritis, para, and periurethritis, Cowperitis, prostatitis, or seminal vesiculitis, should receive appropriate local treatment, with irrigations, instillations, prostatic and vesicular massage, hot rectal irrigations of normal saline solution, and variously medicated rectal suppositories; also local applications through the endoscopic tube, and the prompt liberation of any pus formation in the periurethral glandular structures, prostate, or seminal vesicles.

Strictures of the urethra must be dealt with either by gradual dilatation, or by internal or external urethrotomy, depending upon their consistence and situation in the canal.

The urine should be rendered antiseptic by the use of urotropin in full dosage, and the patient instructed to drink freely of bland still waters, and to avoid alcoholic beverages, and all articles of diet that cause urinary concentration or irritation.

The local treatment of the joints depends entirely upon the stage of the disease in which the patient is seen.

During the acute period the affected joints should be put completely at rest.

The patient should be kept as quiet as possible, or put to bed, and the inflamed joints immobilized by appropriate splints; the use of cold wet dressings of aluminum acetate, bichloride of mercury or a solution of lead subacetate, in conjunction with an ice-bag, is indicated for the relief of pain and swelling. Internal medication with the salicylates, aspirin, pyramidon, etc., is sometimes useful in alleviating the pain, but these drugs have absolutely no specific action whatsoever.

When the process has reached the subacute or chronic stage it is time to begin the use of measures designed to restore the mobility of the joint and to prevent the formation of adhesions.

Massage, passive and active movements, the use of superheated dry air, baking the part at a temperature of 250-350 degrees F., the therapeutic incandescent lamp and the Oudin high-frequency electric current are all very useful at this time.

Some benefit may also be derived from local applications of ichthyol, methyl salicylate, or compound iodine ointments, and a firm pressure bandage.

Of utmost importance in this stage of the disease is the use of gonococcic vaccines and sera.

These should be autogenous whenever

possible, but very satisfactory results can also be obtained from the use of the usual stock preparations.

The dosage should begin with about 25,000,000 organisms and the injections repeated, with constantly increasing doses, every three to six days, according to the reaction and the results obtained.

Antigonococcus serum has not yielded as good results, in my hands, as vaccine but it is occasionally very beneficial, and should therefore not be forgotten.

The large number of cases of gonorrhea in which the seminal vesicles have apparently acted as the local foci of infection has led Fuller and others to resort to perineal incision and drainage of these structures.

Some very brilliant results have been reported following this procedure but the operation should never be advised until the above methods of treatment have been given a fair and sufficient trial, as the exposure and drainage of the vesicles is at best an operation of some magnitude.

The use of Bier's hyperemia is sometimes of service, in chronic and subacute cases; but in the authors' experience it has proven of doubtful value.

Occasionally in rebellious cases of hydrarthrosis which have resisted strapping and the other measures described above, it may be necessary to resort to aspiration of the joint under the most rigid aseptic precautions.

In the rare cases in which the arthritis goes on to suppuration immediate arthrotomy and drainage is imperative, but the prompt and intelligent application of the methods of treatment outlined above will as a rule render the adoption of this measure unnecessary.

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GONORRHEAL ARTHRITIS.

BY

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The association of arthritis or "rheumatism" with gonorrhea is a very old one. Sir Benjamin Brodie is given the credit of having been the first to establish gonorrheal arthritis as a distinct entity, according to Murrell¹. In 1818 he gave a clear description of five cases of gonorrheal arthritis in his "Pathological and Surgical Observations on Diseases of the Joints." However, it is quite likely that the credit for a much earlier observation in this respect is due to John Hunter, who writing in the year 1716 stated that he knew "one gentleman who never had a gonorrhea but that he was immediately seized universally with rheumatic pains, and this happened several times."² On the other hand, Fournier is declared³ to have been the first to formulate the proposition that gonorrhea was the necessary originating cause of this form of rheumatism.

Its frequency is somewhat uncertain, as authors vary considerably in their estimates, but most writers believe that one or two per cent. of all persons afflicted with gonorrhea develop arthritis. In a series of 812 cases in the British army, Pollock and Harrison⁴ observed arthritis 15 times. Some writers go as high at 10 per cent., but this is certainly excessive. Women suffer far less from this form of arthritis than men do, probably, as has been stated, because they do not enjoy the possession of a prostate. Female children suffer more often from arthritis than in adult life, and it may develop either after vulvovaginitis or ophthalmia neonatorum. This is made evident by the statement attributed to Holt⁵ that "a pyemic arthritis in a young infant, is much more

frequently due to the gonococcus than to the streptococcus, or any other pyogenic organism."

There is apparently no immunity to this form of infection. Any joint in the body may suffer, but certain joints suffer more than others, as a rule. In the order of frequency come first the knee, followed by the ankle, wrist, fingers, great toes, elbow, shoulder, hip and temporomaxillary joint. Tenosynovitis and periarticular hypersensitiveness are frequent manifestations of this infection. One joint is usually attacked, but others may quickly follow.

Gonorrheal arthritis does not appear to be in any way associated with the rheumatic diathesis, as is well demonstrated by the fact that the salicylates are of no value whatever in the gonorrheal type. While it is common for the gonorrheic to suffer repeated attacks of arthritis with his repeated attacks of gonorrhea, true rheumatism is not influenced to the slightest degree by the coincidence of gonorrhea. Digglemann, however, has observed that joints which have been the seat of rheumatic fever, are especially liable to attack by the gonococcus.

Bouchard⁶ described a form of spinal arthropathy of a chronic nature which is usually mild in its manifestations, but may be severe, and then constitutes, in his opinion, the so-called "Spondylose rhizomélique" of Marie. In its usual form it attacks one segment of the spinal column, the lumbar, dorsal or cervical. The symptoms are limitation of movement, at times going on to ankylosis, deformity of the spine, and sometimes the formation of osteophytes. Bouchard claims that these cases are gonorrheal in origin, and that they may develop years after an acute attack, when there is no evidence of the disease, but some old

focus of chronic inflammation in the prostate or seminal vesicles.⁷

This may be evidenced by the fact that this particular complication of gonorrhea, like its mate, acute epididymitis, is observed as a sequence of certain unduly severe methods of treatment, rather frequently, and extremely rarely, or altogether absent in cases treated gently and conservatively. The discovery and isolation of the gonococcus in the joint fluid, and its occurrence in the second or third week of the gonorrhea, at the time when the inflammation is at its maximum height, leave no doubt as to its nature and etiology.

Although gonococcic arthritis may develop as early as five days after the original infection, it must be remembered that metastasis may occur at any time during the acute or chronic stages of the disease. It has been known to develop seven years after the acute infection. Careful observers have noted the fact that the gonococcal metastasis usually occurs between the eighteenth and the twenty-second day after the primary infection. This seems to be the usual time when the gonococcus invades the blood stream and takes its place at the particular metastatic site. Murphy⁸ mentions this fact by way of comparison with other metastatic joint infections. Thus, in the metastatic streptococcus infection, the latter is precipitated in its metastases usually within 48 hours, rarely later than 72 hours after the initial infection; in the streptococcus and grip infections, metastases occur about the ninth day; pneumonia, from the eleventh to the fifteenth day; typhoid, from the second to the fourth week; the lower types of infection run a little longer time before they are precipitated in the joint. Each type therefore seems to have a definite time for metastasis to develop, and when

it is associated with trauma, it comes on a certain definite time after the trauma. It is important to remember these data in order that a proper differential diagnosis be made.

In the purulent cases, the gonococcal infection is associated with an additional infection by pyogenic organisms. The latter may enter the joint simultaneously with the gonococcus, thus constituting a mixed primary infection, or they may enter the joint later, as a secondary mixed infection. We therefore find, in the very severe cases, that the pyogenic organisms predominate often to the extent of destroying the gonococci; the joint in such cases, is found to contain no gonococci. Nevertheless, the latter have been found often enough in the blood stream, and in ulcerations on the valves of the heart.

In passing, it may be mentioned that the gonococcus may seek the blood stream whatever its primary location may be. An unusually striking illustration of this fact is seen in the case reported by Lydston⁹ in a child three weeks old. Forty-eight hours after its birth, the child developed gonorrheal ophthalmia, which was fully controlled by treatment; two weeks later, however, metastatic arthritis developed in the left wrist and the right knee.

It is thus apparent even to the most superficial observer that gonorrheal arthritis is but one manifestation of a general infection by the gonococcus. There is ample clinical and microscopic evidence that the synovial membranes of joints, tendons and bursae are invaded by the bacteria and their toxins. There is no question but that the blood stream is the vehicle by means of which the gonococcus is transported to the site or sites of localization. Why this infection of the blood stream takes place in one or two per cent. of cases of gonorrhea, it is difficult to

say. One is led to believe, after a careful study of these cases, that it is due either to a particularly virulent strain of gonococcus, which hews its way, so to speak, beyond its natural confines into the blood current, or, which is even more likely, to an unusually violent and severe local attack induced by improper treatment. I am personally of the opinion that unwise and "too much" treatment have more to do with the causation of gonorrheal arthritis than the most severely virulent form of gonococcus.

In other words it requires the presence of the gonococcus combined with an abrasion plus trauma of some sort, to facilitate the extension of the inflammatory process into the metastatic site. An unusually vigorous massage of the prostate, careless introduction of a steel sound, strong injections, all of these may constitute the trauma required for the development of a metastatic arthritis. In women, menstruation and pregnancy favor the irruption of the bacteria into the blood. Metastasis may take place at any time after the involvement of the posterior urethra, but I do not ever recall having seen or read of a case in which arthritis occurred without the deep urethra being affected, though there appears to be no reason why such a metastatic process is impossible.

Classification.—Pathology. There are many variations in the manifestations of this form of arthritis, and authors differ considerably, though in the main, it may be stated that the following classification¹⁰ serves every practical purpose:—

1. Arthralgia without definite lesions in the joint.
2. Acute serous synovitis with much periarticular swelling.
3. Acute fibrinous or plastic synovitis with slight effusion.
4. Chronic serous or purulent synovitis.
5. Involvement of periarticular structures, such as bursae and tendon sheaths.

A far simpler classification contains but two subdivisions: 1, gonorrheal arthritis, in which the organisms are located in the joint itself, and 2, gonorrheal osteo-arthritis, in which the gonococci are localized in the articular extremities of the bones, and any effusion into the joints is secondary. The cartilages in this type are liable to become eroded, and bony ankylosis may result or spurs may be formed by periosteal proliferation.²

Luys offers a simple and practical classification,¹¹ as follows:—

1. Arthralgia, characterized by articular pain only; several joints may be affected in this fashion at the same time, or the pain may be vague and move about from one joint to another.

2. Hydrarthrosis, usually in the knee, unilateral, sometimes bi-lateral. The synovial sac is distended, the joint is swollen, the patella is raised and separated from the long bones. This form is very resistant to treatment and lasts a long time. Its principal feature is its stationary character.

3. Acute arthritis, the most common type, characterized by severe pains affecting several joints simultaneously; usually accompanied by moderate fever. The onset is rapid, tumefaction following immediately upon the pain. This form usually terminates in ankylosis, seldom ending in resolution. Occasionally suppuration supervenes, which constitutes a most serious complication.

4. Polyarthritis deformans, chiefly found in connection with the small joints, with those of the toes and fingers. Often, a curious deformity (Fournier's radish finger) is formed when the articulations between the first and second phalanges are affected. Atrophy of the corresponding

muscles is common in all lesions of this type.

Still more simple is the broad division of gonorrheal arthritis into two distinct clinical types, acute and chronic. The acute type has already been described above from the pathologic standpoint. For purely clinical purposes this is by far the most practical of all classifications.

Acute arthritis comes on suddenly and without warning. Usually it begins with a chill, moderate fever, full, strong pulse, diminished urinary secretions, coated tongue and severe localized pain. This is the most striking symptom, and it may be excruciating in severity. Pain is always increased by attempts at motion of the joint and is somewhat relieved by immobilization. When pyogenic bacteria enter the joint, the symptoms take on an added severity, this being coincident with the introduction of purulent material into the serous joint fluid.

Under suitable treatment, the symptoms abate gradually, or sometimes very quickly (under the vaccine treatment), and the joint is restored to its former condition. Ankylosis may, however, take place, with more or less atrophy of the muscles of the limb involved.

Chronic arthritis is the far more insidious and dangerous type. It is usually the type which is associated with a latent focus of infection, a chronic seminal vesiculitis in the male or a pyosalpinx in the female. Ankylosis is quite frequent. The general health declines, coincident with the gradual development of a hydrarthrosis, the principal complaint being pain and impairment of function. There is evidence of a general systemic infection, loss of weight and appetite, anemia, general physical and nervous exhaustion, loss of muscle tone and

general neurasthenia. Fever and pain may be absent altogether and the joint or joints may exhibit but slight tenderness. This type of arthritis may last many months without improvement.

The complications of gonorrheal arthritis are the result of direct extensions of the inflammatory process and include bursitis, tenosynovitis and infiltrations of the tissues attacked. Myositis is an unusual complication; likewise abscess outside of the joint, an instance of which was reported by Ware.¹² The sequelae of the joint process itself depend upon the nature of the inflammation and the treatment. If the bone is implicated from the beginning, as in osteo-arthritis, the process may result in the complete destruction of the joint with bony ankylosis; in simple arthritis, the result may be a fibrous ankylosis.

The prognosis as to recovery is not a bright one, although it must be admitted that the new methods of treatment with sera and vaccines have materially changed the former hopelessness into a prognosis of greater encouragement. One must always remember that these cases show a marked tendency to chronicity and to occasional relapses. It is consequently impossible to offer an enthusiastic prognosis.

The diagnosis is not a difficult matter in the average case. Any arthritis occurring coincidentally with an acute or chronic gonorrhea, should at once be suspected of being gonorrheal in origin and nature; likewise any joint inflammation occurring in a patient suffering from chronic vesiculitis or pyosalpinx. It is well to look for vesiculitis or pyosalpinx in any case of arthritis, which does not respond to the usual antirheumatic remedies; in this way, the diagnosis will often be made. Occasionally

in acute cases, when urethral lesions are absent, the finding of the gonococcus in the joint fluid, will make the diagnosis certain. The complement fixation test offers an excellent aid to the diagnosis, as first suggested by Müller and Oppenheim,¹³ and likewise the cutaneous reaction observed by Irons.¹⁴ However, it should be borne in mind that the complement fixation test is of no value in the differential diagnosis of arthritic cases, that have recently been treated or are still under treatment with gonococcic vaccine. In such cases as shown by Schwartz,¹⁵ a positive reaction is surely to be expected, showing that antibodies specific to the gonococcus are readily produced in the human system.

Of course it goes without saying, that there is nothing to prevent the occurrence of an acute articular rheumatism in a patient suffering from acute or chronic gonorrhea. In such a case, the complement fixation test and the skin reaction would be positive, but the clinical features of the arthritis would be negative, and the burden of proof would fall upon the clinical symptoms alone.

Stetten¹⁶ reports two cases which would indicate that periarticular suppurations of pure gonococcic origin may occur, simulating an ordinary pyogenic tenosynovitis or cellulitis. They apparently follow an arthritis in a nearby joint, which in itself may have been without suppuration. In such cases, a history of gonococcus infection, the previous joint lesions, the absence of an external point of entry for the infection, and the finding of gonococci in the urethral or vaginal secretion—all of these might suggest the diagnosis, which will be confirmed by finding the gonococcus in the pus of the periarticular lesion.

The X-ray should also be considered as a useful aid in the diagnosis, perhaps the

most useful of all in a doubtful case. It will be found that there is slight damage, if any, to the bones of the joint in gonorrheal infections.

An important point of differentiation is that of tuberculosis of the joint. The tuberculin test, von Pirquet reaction, and the constitutional phenomena will aid materially in this differentiation. Lyle¹⁷ in an interesting study of morbus Poncet (tuberculous rheumatism), calls attention to the frequency and varieties of this form of arthritis, which, in many respects resembles that of gonorrhea. He emphasizes the importance of eliminating the possibility of an obscure rheumatism being tuberculous in nature, and concludes, with Poncet, that "in the presence of rheumatism, the first thing we should do is to demonstrate that it is not tubercular." We may add that the second thing to do is to demonstrate that it is not gonorrheal.

We have no specific remedy or treatment for gonorrheal arthritis, though the success which has attended the use of sera and vaccines leads to the hope that this long-desired specific may be close at hand. The medicinal treatment must therefore be largely symptomatic and expectant; the usual antirheumatic remedies, salicylates and aspirin, are of little or no value in this condition. Neither are the many drugs of all kinds that have been suggested.

In the past, local treatment received first attention. It goes without saying, however, that gonorrheal arthritis being a local manifestation of a constitutional involvement, our first duty is to combat the general infection, not forgetting at the same time, its local origin. Consequently the treatment resolves itself into three distinct phases, constitutional, by means of sera and vaccines, local treatment applied to the affected

joint, and local treatment applied to the original gonorrheal focus, whether it be in the urethra, the seminal vesicles or the cervix. The last presupposes that in the treatment of gonorrheal arthritis, a persistent effort must be made to determine the original seat of infection, for if that is not known and eradicated, the patient must expect to suffer repeated recurrences of his arthritis.

The biologic methods of treatment applied to gonorrheal arthritis are still in their developmental stage, but certain principles and rules may be laid down as a result of our experience with these new methods of treatment. Some observers believe that the gonococcus serum is most effective in the acute lesions involving the tendons, bursae and joints which occur during an acute attack of gonorrhea, especially in cases in which the constitutional invasion is a comparatively mild one; the use of the serum is often attended with considerable success in these cases. Every day, for three to six days, according to the character of the lesion five c. c. of antigenococcus serum is injected subcutaneously. In the average mild case, this will suffice to control all the systemic symptoms. It is maintained by Rogers, who with Torrey,¹⁸ first produced the antigenococcic serum, that fully 75 per cent. of joint involvements respond favorably to this serum. Favorable results have also been reported by Herbst and Belfield,¹⁹ Swinburn,²⁰ Corbus²¹ and others. It has also been recommended, as also the vaccines, as a prophylactic, in cases of acute gonorrhea, in which there are evidences of impending epididymitis or arthritis. I have found this an exceedingly useful practice, and believe that the number and frequency of joint infections would be materially diminished if it were to become a routine measure.

The preponderance of sentiment today is largely in favor of the vaccines, as against the serum, largely perhaps, owing to the fear of serum sickness and anaphylaxis. An extensive literature has developed on this subject within the past few years, and it would exceed the length allotted to this paper to make more than a mere mention of the more important contributions to the literature, as an evidence of what has been accomplished in this direction.

The relative value of vaccines in gonorrhea and its complications has been well stated by Keyes²² as follows, and is appropriate in the present connection:—

In localized gonorrhea—

Acute urethritis, useless.

Chronic urethritis, probably useless.

Vulvovaginitis, doubtful.

In the complications of local gonorrhea—

Epididymitis, useful.

Other inflammations, useful.

In systemic gonorrhea—

Acute arthritis or iritis, very useful.

Chronic arthritis, very useful.

Sepsis, sometimes specific.

Whether the pure gonococcus vaccine or the mixed vaccine is employed, depends on the character of the infection. It is in the very late stages of the gonorrheal infection that the pyogenic organisms, particularly the staphylococcus, are in the main responsible for the continuation of the lesions. In these cases, the mixed vaccines achieve their most striking results. They should also be employed in those cases, in which it is impossible to determine the exact character of the bacteria associated with a pathologic lesion, inasmuch as they are apt to prove of greater benefit than a pure vaccine of a single bacterium.

In the methods of administration of the vaccines, there is considerable variation, but generally speaking, the elementary principles do not vary. Beginning with 20 to

50 million dead bacteria, the dosage is usually run up rather sharply to 200 and even as high as 500 million bacteria, depending on the character of the case and the reaction obtained. In the average case, it is rarely necessary to go higher than 300 million in order to obtain the desired result. The injections are repeated as soon as the reaction of the preceding injection has passed off. In my personal experience the results with the mixed Neisser bacterins, have been strikingly satisfactory, and I can recall the case of a young man, referred through the courtesy of Dr. Henry Mann Silver, in which a serious joint affection was restored to normal after two or three injections.

Murrell¹ believes with many others, that the best results are obtained with the use of autogenous vaccines. For urethritis uncomplicated, he recommends the injection of 75 million bacteria; for the arthritis, 500 million. He agrees with Hartwell⁴¹ and other observers in declaring that autogenous vaccines appear to be more effective than stock vaccines, and are useful in all stages of gonococcic arthritis except in those cases in which ankylosis has occurred.

Arthigon (gonococcus vaccine) has been used somewhat extensively in Germany. It is given intravenously. Frühwald²³ found that when injected in this manner, a reaction was obtained in most cases, consisting of a rise of temperature, and he considers this a specific reaction. Rohr²⁴ found this vaccine a specific for gonorrheal complications, in a series of 133 cases. Excellent results in arthritis and other complications were also reported by Bruck and Sommer²⁵. On the other hand, Leszlenyi and Winternitz²⁶ found that arthigon was effective in but one-third of the cases of gonorrheal

complications in which they tried it. They were not altogether impressed with it either as a therapeutic or diagnostic agent.

L. Cruveilhier²⁷ and others report cases in which most favorable results were obtained with the use of repeated injections of Besredka's sensitized antigenococcus virus vaccine, in both the acute and chronic stages of gonorrheal arthritis.

More recently there has been introduced a bacterial filtrate (phylacogen) which has received much favorable and adverse comment. It may be employed as purely gonorrheal, or mixed, it being understood that the former is to be used where the gonococcus is the controlling organism; the mixed phylacogens are recommended where other organisms predominate. Usually the dosage is from 3 to 10 c. c., and is repeated in from two to four days according to the reaction. The purpose of these injections is to establish an active immunity against the offending organism and then to maintain this immunity until the infectious bacteria and their toxins have been destroyed. It is therefore necessary to continue this treatment for long periods, and in long standing cases, the injections are repeated at longer intervals than in more recent cases. Phylacogen may be administered subcutaneously, intramuscularly or intravenously.

Lasserre²⁸ states that treatment with anti-meningococcus serum has been successful in France, especially in cases of subacute gonorrheal arthritis with a tendency to septicemia. Likewise in the acute varieties with effusion or a tendency to ankylosis. When the arthritis is associated with tuberculous lesions, it does not respond to this form of therapy. Four or five injections are given in the buttocks every four or five days, 0.20 to 0.30 being the dose. No by-

effects are noted except a slight rise of temperature.

Heresco and Cealic²⁹ also recommend this serum. They administer it subcutaneously, near the affected joint, injecting between fifty and sixty, c. c. daily. The earlier after the joint involvement, the more effective it is.

Notwithstanding our confidence in the value of serum and vaccine, local treatment of the affected joint demands serious attention. The character of this treatment varies considerably, as the following hasty review of the more important methods will indicate. Hitherto complete rest, immobilization, has been considered the first requisite, but in view of the strong tendency to ankylosis it is deemed best to avoid this practice wherever possible.

The particular aim in gonorrheal arthritis is to diminish pain and ultimately avoid stiffening of the joint. With this end in view Bier's hyperemia³⁰ is probably the most popular and effective method of local treatment. With a correct technic the pain in an acutely infected joint will be relieved within a few hours, sometimes almost immediately. This release from pain renders possible the application of gentle active and passive motions, thus avoiding the liability to ankylosis which is so prevalent after immobilization of these infected joints. These passive exercises are perfectly harmless as long as they cause no pain. The treatment is applied twice daily for ten or eleven hours at a period. In the interval the limb is elevated in order to reduce the edema. Increased mobility and decrease of pain are the indications of a favorable effect of the treatment. Baetzner³¹ has studied this method in many cases and recommends it highly. The duration of treatment in his cases averaged twenty-six days, and in none

of them did stiffness of the joint follow. Treatment is begun at the earliest possible moment. Hyperemia has likewise been highly recommended by Zieler³² and numerous other observers. I have had considerable success with the method in my own practice, and next to the vaccines, I regard hyperemia as the most effective single method of treatment for gonorrheal arthritis. I consider the combination of hyperemia and the vaccines, the ideal treatment for this condition, and I employ it whenever and wherever possible.

Sainz de Aja³³ found injections of salicylate of soda more efficient than either serum or vaccines. A solution of the drug is injected near the affected joint on alternate days. When several joints are involved, he injects 4 c. c. of a 25 per cent. solution intravenously. The effect is often very prompt, one patient with arthritis of the knee having been cured by two injections.

Ramond³⁴ and Lop³⁵ obtained satisfactory results in acute arthritis by the subcutaneous injection of the fluid obtained by aspiration of the affected joint. Ten c. c. of the fluid is removed, and sterile air injected into the joint in equal amount, and also into the periarticular arthritic cellular tissues. By heating this aspirated fluid to 45 C., for half an hour, all danger of injecting live gonococci subcutaneously is removed. The effect of the treatment is to diminish pain and swelling, cause the effusion to disappear and prevent ankylosis and atrophy. Some cases were cured by a single injection.

Some authors recommend the internal administration of pure calcium sulphide up to the point of saturation, together with the application of colloidal silver ointment to the affected joint.

Tinct. iodin has been injected into the joint by Hildebrand³⁶, 5 grammes being the dose employed. At first the joint becomes markedly swollen, but this soon disappears and in a few days pain is gone and mobility of the joint returns.

Heinrich Wolf³⁷ aims to prevent the formation of adhesions, diminish pain and encourage passive motion by the employment of massage, in conjunction with the serum or vaccine treatment. He advises that massage be begun about two weeks after the outbreak of the disease. The danger of a general infection as a result of the massage is declared to be nil, as the gonococci are believed to be dead within a week after the disease started. Massage must be given by the physician, only with the cooperation of the patient. The pain must be relieved immediately after the massage. Only effleurage is permitted. Pétrissage, tapotement and vibration are contraindicated. Passive motions should be begun as soon as the pain is relieved to such an extent that the patient can stand it. The author gives two treatments daily, and after six to eight days, passive motions are instituted.

Braendle³⁸ recommends electric "colloid metals," electrargol and fulmargin, for gonorrheal arthritis. He states that these metals are produced electrically, and represent a solution which contains a great number of ultramicroscopic particles of metal in suspension. They are produced by the action of electric sparks between two silver plates suspended in distilled water, producing a minute powdering of the metal. The solutions must be prepared isotonicly. Ten c. c. are injected intramuscularly. He also adds that chronic cases of gonorrheal arthritis are benefited by the Röntgen rays.

A local application in the form of a solu-

tion, applied directly over the affected joint is warmly praised by Solovtsova,³⁹ the solution i. e. as follows:

R	Acidi salicylici	20.
	Alcoholis	200.
	Olei ricini	20. M.

Between applications of this solution a bland ointment should be applied, as the solution often causes an actual burn of the skin. Good results are said to follow this treatment.

J. B. Murphy⁸ has been using with much success, a two per cent. solution of formalin in glycerin, injected into the affected joint, repeated according to the reaction produced. In order to accomplish the desired purpose, this reaction must be strong enough to overcome the infection in the neighborhood of the joint. The injections increase the polynuclear cells in the fluid of the joint and also the polymorphonuclear leucocytes in the blood and in the joint. The pain is usually relieved considerably within 48 hours, absolute rest is insisted upon, with an extension on the joint to keep the opposing surfaces apart and thus relieve the intra-articular pressure. *

Drainage of the seminal vesicles has been proposed and successfully performed by Fuller.⁴⁰ This operation is based on the knowledge that a chronic gonorrheal seminal vesiculitis is often responsible for the development and persistence of gonorrheal arthritis. By draining these organs (vesiculotomy), he aims to remove the focus of infection. At the present time of writing (May, 1915) Dr. Fuller tells me he has operated on approximately three hundred cases of seminal vesiculitis for the relief of gonorrheal arthritis, and his results are highly satisfactory. There has been no mortality (except one case with chronic nephritis), and the percentage of recurrence has

been very slight. The technic of this operation has been modified by Squire and Young also with satisfactory results. From present indications, this method is growing in favor, but it is still too early to say anything definite as to ultimate results.

It must therefore appear evident from this cursory review of the subject, that gonorrheal arthritis has received considerable attention within recent years, as a result of which this condition may be said to be fairly well controlled from the standpoint of diagnosis as well as of treatment. Striking evidence of this conclusion is found in the comparative rarity of those bad cases of arthritis which we were accustomed to see ten and fifteen years ago. Improved technic in the treatment of the original gonococcus infection, combined with a realization of the benefits to be attained by an early and persistent use of the sera and vaccines, have resulted in a marked diminution in the incidence of metastatic joint infections. Not only is the number of cases appreciably less than formerly, but they are prevented from becoming chronic and inaccessible to treatment, by virtue of the early and intelligent treatment which these cases generally receive at the present time. Likewise the occurrence of ankylosis is on the decrease, thanks also to improved therapeutics in the treatment of this distressing condition. On the whole, one feels justified in expressing the sentiment that gonococcus arthritis will some day be a rare complication of gonorrhea, and when it does occur, it will be controlled so well, as to leave little or no permanent damage in its wake.

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THE TREATMENT OF RHEUMATOID ARTHRITIS.

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Dating back to the most remote periods, and having received the attention of most of the famous lights of the medical world, it is far from gratifying to us that we must still admit a great deal of obscurity as to the real nature of this disease.

Scientific progress has at least enabled us to separate the malady from many of the diseases whose presence in the medical mind acted as a darkener of counsel.

Perhaps the most valuable step we have made is that which clearly removes the disease from that vague realm of "rheumatism." By that step we have saved our patients from the harmful effects of greatly restricted diets, of continued use of salicylates and aspirin, and we have stimulated our minds to renewed activity in searching for the real nature of the disease.

The general consensus of modern opinion is toward the infective nature of the disease. Investigation along this line has proved reasonably fruitful both in diagnosis and in treatment. And yet, to the general practitioner not entirely so. He sees many cases in which a focus of infection cannot be found, and many more, where his hopes are raised by discovery of some such focus, only to be dashed by the com-

plete failure of measures based on the treatment of the condition.

I feel that in summing up the condition as one of infection of some nature, we have by no means grasped fully the disease, and that there lies a very broad field of speculation and treatment aside from the consideration of infection.

The hereditary aspect, the preponderance of lesions over demonstrable infection, the clinical course of the malady, the presence of the physical and psychical changes, and in a word, the protean and deep-seated nature of the disease, point to a disturbance of the most basic bodily functions.

With the attention that has been devoted of late years to glandular therapy, it is not surprising that internists have given it a chance in the treatment of the disease under consideration. This use seems to me to be very logical and fitting. When we consider the potent influence of the thymus and thyroid glands over bodily and nervous development, and the special relation between the pituitary body and osseous and cartilaginous formation, and contemplate the powerful rôles of the adrenals, ovaries and testes, we cannot but feel that in this realm lie many alluring possibilities for treatment of a disease whose symptoms bear so intimately upon the fields which these glands appear to influence.

While a certain number of physicians have made mention of the glandular extracts in rheumatoid arthritis, I feel that they have in no wise received the attention which they merit. In the hands of some men they have given good service, and I myself have never failed to see improvement to a greater or lesser extent follow their use.

One must not, of course, expect too much of them, nor must one ignore any other

course of therapy which is seen to be indicated.

Search must be made for underlying factors, foci of infection, presence of syphilis, tuberculosis or gonorrhea. In one of my cases, in which glandular therapy was failing, the tardy discovery of a four plus Wassermann, and treatment aimed at the syphilis, combined with the previous medication, produced very pleasing results.

If we are to accept as a fact the infection theory, then the undoubted good done by the glandular extracts must be attributed to their general improvement of the patient's condition, just as the hygienic treatment of tuberculosis renders the patient better able to cope with his infection.

If on the other hand, we consider that we are dealing with a profound disturbance of metabolism, in which the presence of infective organisms is merely a factor among many, the treatment by agents so intimately connected with metabolism, is surely to be given great consideration.

In actual practice I have found that three of the preparations stand out especially in value. They are the thyroid, thymic and ovarian extracts.

The first two I have used empirically, the latter, when marked symptoms of melancholia are present, especially if the patient be a female and at or beyond the menopause. With the extracts of the testes I have had no experience. Pituitrin has been given a trial in one case, but after a reasonable period, as no results were noted, I discontinued it.

As to the diagnosis and treatment of infective foci, I shall leave that to others to discuss. Along the lines of electrotherapy and radiotherapy, I would also preserve a discrete silence. The X-ray I have employed only in diagnosis of infective foci,

and determination of the extent of joint involvement. I feel that the continued use of the iodide of potassium in cases other than syphilitic is both inefficacious and harmful.

As regards arsenic, its tonic and alterative powers should make its cautious use of value in selected cases. I have employed the triple arsenites combined with nuclein in several cases, and I feel with a certain amount of benefit, and enhancement of the results from glandular extracts.

With regard to the exhibition of these products I have no suggestion to offer other than the routine dosage. I employ the thyroid and ovarian extracts together and every two weeks either add thymic extract, or substitute it for the thyroid, for two weeks. If any symptoms of thyroidism, such as diarrhea, rapid pulse, tremor, or hyperesthesia develop, I discontinue the thyroid for a long time, and give it in very small dosage when recommencing. I question if any endeavor to find symptoms of special need of any special extract will be of any benefit, though interesting discoveries along this line may be made as our knowledge of the internal secreting glands increases.

Along with the treatment above outlined, if infective foci can clearly be demonstrated, treatment of them, and by vaccines prepared from them is surely indicated.

Regulation of the general hygiene and diet is of course very, very important. Also much rest, both bodily and mental, is strongly indicated.

All our treatments I believe may be enhanced in value by local treatment of affected joints. For this, Biers' hyperemic bandage, hot wet or dry packs, baking and massage may be considered. Two measures of comparative recency should be men-

tioned, the local injection of fibrolysin, and of tuberculin.

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DIET IN GOUTY AND RHEUMATIC CONDITIONS.

BY

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The chief of these conditions are gout, acute and chronic, rheumatism, acute and chronic, and rheumatoid arthritis. As all these are but names for an irritation produced by uric acid, a great point in diet is to leave out foods which contain this acid; but, in addition to this main point, the diet requires to be modified according as the conditions are associated with high nutrition on one hand, or debility, anemia and poor nutrition on the other. It is possible to give a very large amount of nourishment on the Uric-Acid-Free Diet. Any quantity of proteid that is taken with ordinary diet can also be supplied by Uric-Acid-Free food, there is therefore no necessity for under-feeding or malnutrition with this diet. As the Uric-Acid-Free-Diet is of itself a cure for anemia, it will regulate that portion of the general debilitated condition, so that a patient who has rheumatoid arthritis with anemia, will, if given plenty of proteid, cease to suffer from both troubles in the course of a year or two. I will now say a few words about each of these main conditions, on the way in which treatment must be modified to suit them.

Gout. That is to say acute arthritis in one joint associated with a general good nutrition and high blood color; patients in this condition simply have to be put on a

moderate quantity of a Uric-Acid-Free Diet in order to get quite well in the course of a year or two; but strength, nutrition and blood color must be watched to see that sufficient food and sufficient nourishment is being obtained. When in the course of a year or two's time the gout has been completely subdued, it will do the patient little harm if he goes back to a small quantity of meat once a day. I do not advise such lapse of diet, but I know that the exigencies of social life often render it inevitable.

Rheumatism, Acute Form. After the fever has been completely subdued by the ordinary drug treatment, which should, in my opinion generally be extended over some twelve months, this condition may, as in the case of gout, be simply put on a sufficiently nourishing Uric-Acid-Free Diet and left on it for some years. If an attempt is made to alter diet too soon the result in all probability will be the relapse of the rheumatism; drug treatment should be continued with intervals of rest till such tendency to relapse has ceased.

Chronic Rheumatism. This condition is generally associated with debility and therefore requires to be fed up, that is to say some excess of proteid is required. When there is no debility the diet treatment is the same as that for gout, but when there is debility dietetic treatment must be modified as for rheumatoid arthritis.

Rheumatoid Arthritis. This condition is always associated with debility and often with anemia, especially in the young, and therefore feeding up is required. Change of diet either should not be attempted at first or should be made very slowly, taking the greatest care that there is no lapse of nutrition. Indeed, where there is very marked debility, it is best to regain full

nutrition by means of drugs and a full ordinary diet before changing to Uric-Acid-Free Diet. I think the Uric-Acid-Free Diet has obtained far less than the credit due to it in such cases because these points have not been kept sufficiently in mind. I look upon all these alterations in nutrition as essentially due to uric acid, the effects being modified by the state of the nutrition upon which it is reacting. I may perhaps also mention that in all cases of *morbus cordis* I follow the teaching of the late Sir Andrew Clarke in diminishing fluids as far as is compatible with a sufficiency of nourishment. I also use the same treatment in cases of cardiac debility, by which I mean weakness of muscle quite apart from any valvular lesion. Indeed my experience leads me to believe that every man who has a flabby biceps has also to some extent a flabby heart muscle.

I will now mention a few points on the diet itself. The chief Uric-Acid-Free foods are cheese, bread and the bread-stuffs or cereal food, white of egg, milk-curd which is fresh cheese, nuts, fruit and vegetables. The patient as a rule should get his chief nourishment from milk, cheese, white of egg, and bread-stuffs, using fruit, vegetables and nuts much in the same way as he does in ordinary diet. A few can take nuts to a large extent but as a rule they are not safe for beginners, for if they cause digestive troubles they will increase debility and prevent the patient from obtaining sufficient nourishment. In all cases the patient should be allowed to take most of those foods which he likes best, but two pints of milk, two ounces of cheese, four whites of egg, with vegetables and fruit will probably supply sufficient nourishment for patients of average weight. An increase must be made in these quantities where nourishment is

defective. On the other hand, in true gout it will not matter much if quantities fall short of the regulation amount for a time in the early days of treatment. Of course any foods that appear to cause dyspepsia should be completely avoided. The mixing of bread and fruit at the same meal is a common cause of flatulence and dyspepsia; when this is the case fruit should be taken alone. I often give it in place of other food at the hour of afternoon tea at which it then forms the only constituent; fresh fruit and dried fruit may be eaten more or less together.

With regard to quantity, I commonly give nine grains of proteid for every pound in the bone and muscle weight of a patient. If the patient requires to be fed up, a grain or two more per pound may be allowed. I am aware that this rule has been much objected to; I give it only as a very rough rule, and regard nutrition and blood color as the best guides. How much proteid is a question that requires very careful attention to avoid any risk of underfeeding. The foregoing is an essentially brief and condensed discussion of this highly important subject which is treated much more completely in my book, "*Diet and Food*," or in my son's practical guide to the diet, "*Health through Diet*."

Strong alcohol kills germs quickly while diluted alcohol kills them slowly. But strong alcohol also coagulates them, and when germs are numerous the coagulation forms an impenetrable layer which protects the germs underneath, and these are not killed. Alcohol of 70 per cent. or less does not coagulate them, hence is a safer and surer disinfectant than 94 per cent. alcohol, but requires a longer time to act.—*Therapeutic Digest.*

IMMUNO-THERAPY IN THE TREATMENT OF RHEUMATISM.

BY

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That rheumatism is an infectious arthritis is now generally admitted. From the fact that cases of rheumatism often recover after the removal of an infected tonsil or some other infected focus, some were lead to believe that these articular inflammations were due to toxic materials that are developed in the infected area and conveyed to the joints by means of the circulating blood; that the involved joints are particularly susceptible to irritation from this toxic absorption. Research work done by Rosenow (*Journal A. M. A.*, September 12, 1914) however, in the course of which he succeeded in isolating living pathogenic organisms from all classes of cases of rheumatic arthritis, conclusively shows that this disease is due to a direct infection of the joint tissues; the tonsils or other localized infections simply serving as a port of entry from where the blood or lymph channels convey the infection to the joints.

A focus of infection is always an indication of insufficient resistance to the infecting organism, making it possible for germs migrating from this focus to grow in other parts of the body. The surgical removal of an infected tonsil or some other focus of infection does not necessarily increase the resistance of the patient to the organisms that caused the infection, nor does the surgical removal of a focal infection eliminate the infected areas already established as joint involvements. It is also a common experience in rheumatic cases to find the original point of infection eliminated while the joint involvements continue. Where

pus accumulations exist their removal is very important but to successfully treat the nonsuppurative joint involvements, measures to adequately develop a resistance to germ development are of utmost importance.

The streptococcus or strepto-pneumococcus group of organisms are the most common invaders in rheumatic arthritis. The so-called micrococcus rheumaticus in all probability belongs to the streptococcus group. The streptococcus is a rather unstable organism, being capable of changing to various types during the course of an infection and as Rosenow has shown may even be converted to a pneumococcus and *vice versa*.

Once recognizing the infectious character of rheumatic arthritis, immunization, from our knowledge of infectious diseases, suggests itself as the most logical procedure.

That drugs are not adequate therapeutic agents in the treatment of rheumatic arthritis is amply illustrated by the great number of chronic invalids which develop under their use. Menzer (*Zeitschrift f. Hyg. U. Infektionskrankheiten*, 1911, lxiii, 296) even goes so far as to say that in his opinion the salicylate treatment of rheumatism is largely responsible for the frequent relapses. He considers acute articular rheumatism a streptococcic infection in which the salicylate treatment modifies the course of the disease sufficiently to prevent a full immunizing development to establish a permanent cure. I think his logic is well grounded. Therapeutic measures that are not in accord with Nature's efforts are not liable to give permanent results. Drugs may give relief but they do not immunize.

My experience with therapeutic immunization in rheumatic arthritis dates back to March, 1902, when I began treating cases

with antistreptococcus serum. The results of this first work were published in *AMERICAN MEDICINE*, October 17, 1903, at which time nine cases were reported. This method of treatment was continued up to March, 1907, with results so encouraging that a constantly increasing number of people applied to receive the treatment. The most annoying feature of this treatment was the frequent occurrences of urticaria due to the large amount of horse serum protein contained in the streptococcus serum.

After having seen the marked therapeutic results from bacterial vaccine inoculations in various other infections, I began using vaccines in the treatment of rheumatism early in the spring of 1907 and found that more pronounced immunizing responses were obtained and the annoying urticaria with a possible dangerous anaphylaxis was entirely avoided. Since then, my experience with the use of vaccine in the treatment of rheumatism, in almost every form, has been sufficiently extensive for quite definite conclusions to be arrived at. Vaccines are now being extensively employed by thousands of physicians in the treatment of rheumatism showing an ever increasing confidence in their value and who once having given them a fair trial, continue their use. Dr. Persson of Mt. Clemens, for example, informs me that he used vaccines in rheumatism as early as 1906 and has continued to use them since.

Physicians who favor the use of auto-genous vaccines usually procure a culture from some focus of infection and prepare a vaccine from the principal organisms present. I have frequently tried this method but have not found it of any advantage. As a routine procedure, I would consider this poor practice because there

are too many chances that the existing focus of infection may have nothing whatever to do with the rheumatism and even where the proper organism is present, it is often so attenuated and modified from the existing environment, that it is of no value as an immuno producer. Carefully prepared polyvalent stock vaccines, from selected cultures, have given the best results in my hands. In my earlier experiences streptococcus vaccines were principally employed but more extensive application convinced me that mixed vaccines containing the pneumococcus and staphylococcus with the streptococcus were preferable.

The most striking results are obtained in the early acute stages, especially so with the first attack. Here almost invariably relief from pain is obtained with a reduction of temperature and other improved clinical conditions within one or two days. I have repeatedly seen cases that were practically helpless in bed from acute joint involvements, sit up and feel quite comfortable two days after the first inoculation. Inoculations should be made at two day intervals for three or four inoculations and at somewhat longer intervals after that for several weeks, to establish a permanent immunity. In all my experience, no case of rheumatism has relapsed where vaccines were employed during the first attack. This would indicate the importance of always treating acute rheumatic arthritis with vaccines. Much valuable time in building up adequate immunity is often wasted by giving salicylates or other drugs and meantime through repeated autoinoculations, the immunizing mechanism is in a measure crippled. By using vaccines early during the first attack, the natural immunizing faculty is still at its best and may be stimulated to advantage. Chronic rheumatism is the result of un-

cured primary attacks, and my experience leads me to believe that if all cases of acute rheumatic arthritis were treated with vaccines, cripples from rheumatism would soon be a thing of the past.

Heart complications have also been materially reduced by this treatment. In an experience covering many hundreds of cases, only two heart involvements developed. One occurred in a child and the other in an adult. Both were left with a somewhat crippled heart but from all appearances are enjoying good health. Wolvertson, (*Merck's Archives*, July, 1914) says: "In those cases in which I have used the 'vaccine treatment' before there was cardiac involvement, no such involvement took place subsequently; any agent which has such a prophylactic value should at once commend itself. And this treatment is free from danger."

Where acute rheumatism follows previous attacks, the results are not so uniformly pronounced although a large percentage make prompt recoveries and remain well. Where relapses take place it is necessary to persistently follow them up with vaccine inoculations. They are liable to have good spells lasting for a week or two and then have very acute relapses. These acute attacks, however, do not last long under the vaccine treatment and in time, with few exceptions, will eventually clear up entirely.

Chronic rheumatism presents itself in an endless variety of forms. Some cases become chronic as a result of repeated uncured acute attacks while others come on insidiously, the patient hardly knowing just when the trouble started. In these chronic cases an extensively mixed vaccine containing streptococci, pneumococci, staphylococci and colon bacilli gives the best results. Chronic rheumatism is practically always

associated with a depressed general health condition and the use of this mixed vaccine seems to act as a tonic by stimulating cell activity in conjunction with its immunizing influence. At all events, one of the first indications of improvement in most cases consists in an improved appetite with a good digestion and increase of body weight. After the general health improves, joint improvement also takes place. In many cases, however, joint improvement will be observed soon after treatment is started.

Treatment should be started with a comparatively small dose. Local reactions at the point of inoculation are more pronounced in chronic than in acute cases and for this reason, the dose should be gradually increased aiming to remain inside of a marked reaction, repeated at four to seven day intervals. These chronic cases as a rule do not tolerate crowding. It is better to give the vaccine less often over a long period of time. It frequently happens that not much improvement takes place until after three or four months' treatment. This is particularly true of the deforming types of arthritis. These cases have a tendency to steadily grow worse under drugs, baths or local treatments, but vaccine inoculations will benefit them if carefully followed out. I have treated such cases almost continuously for two years with ultimate benefit. Even if nothing more than staying the progress of the disease is accomplished; this in itself is worth while. Vaccine could not be expected to correct extensive joint deformities but, where, under the immunizing influence of vaccines, joint pain and active inflammation is eliminated, it is remarkable, how-through passive motion, some of these old joints can be limbered up.

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THE EYE IN RELATION TO RHEUMATOID AFFECTIONS.

BY

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Previous to the days of bacteriologic and complement fixation tests, many diseases of the eye, especially those of obscure origin, were attributed either to rheumatism or syphilis. Happily those days have passed.

The researches of Poynton and Paine in particular in the last fourteen years, have established on a pretty firm basis, that acute inflammatory rheumatism is an infective and even an infectious disease, due to a micro-organism of the streptococcus type, the particular organism they found being a diplococcus. Dr. Schneider and others have added their evidence to the same effect. Rheumatism, not only in its acute form, but also in its chronic manifestations, is considered by them as a specific disease, due they believe to a definite infective agent.

More recently the investigations of Billings, Rosenow, Beatie, Davis, and others, have given weight to the earlier investigations of Poynton and Paine. And Horace Greeley in a recent paper¹ on this subject states:

"Here I should remind the reader that I am considering acute inflammatory rheumatism, chronic articular rheumatism, and arthritis deformans as but different manifestations of one cause modified by individual susceptibility, both constitutional and local, and duration of disease. Any peculiarity of the particular streptococcus infecting a given case, having been most probably developed under the influences acting upon it as a parasite upon that case, may be included in said idiosyncrasy."

At present, therefore, we have some bac-

teriologic basis for a diagnosis, especially if inoculation experiments can be made, and we are not dependent wholly on the history of the case and the administration of drugs to arrive at the diagnosis.

Some of the affections of the eye which may have a rheumatic origin are: Iritis, cyclitis, episcleritis, scleritis, keratitis, sclerokeratitis, inflammation of Tenon's capsule, muscular paralyses and optic neuritis, and even glaucoma has been attributed to it.

Iritis. Iritis of a serious or plastic type may result from a chronic or subacute rheumatism. It rarely ever follows acute rheumatism, such cases being extremely rare, though there are a number of well authenticated cases reported.

Clinically it is often impossible to differentiate rheumatic iritis from the plastic type of iritis due to syphilis. The fibrous exudate is not so extensive as in syphilitic iritis and is confined more to the anterior layers of the iris; while the pain is often agonizing and the eye extremely tender to the touch. The history of the case, as swollen joints and other rheumatic symptoms, and the exclusion of syphilis by means of the Wassermann tests, all aid in arriving at a diagnosis. Unfortunately it sometimes happens that the iritic affection is the only symptom of the rheumatic condition of the patient. The other indications of rheumatism being absent, therapeutic diagnosis has been resorted to in such cases, large doses of salicylate of soda, given both by the mouth and by rectal enema, being relied upon to clear up the diagnosis.

Rheumatic iritis is usually ushered in by more or less flushing of the whole ocular conjunctiva, followed later, especially in the severe cases by iritic injection, marked pericorneal injection, intense pain and tender-

ness of the eyeball, small fixed pupil, and at times, deposits on the posterior surface of the cornea. These deposits on the posterior surface of the cornea are especially apt to occur in the so-called serious iritic cases in which the anterior chamber is deepened, the pupil dilated and the aqueous humor more or less clouded. Rheumatic iritis rarely attacks but one eye at a time and is especially liable to recurrences, but not always in the same eye.

Treatment. Locally, atropin to dilate the pupil and relax the ciliary muscle; hot fomentations, frequently applied, and leeches to the temple if the pain is very severe; dionin in 10 per cent. solution dropped into the eye once or twice a day, is often of great benefit. General treatment, massive doses of salicylate of soda in the early stages of the disease, which should be gradually reduced as the patient improves. The patient should be confined in a darkened room in the acute stages of the trouble.

Gouty Iritis. For the purposes of this paper gouty iritis may be classed with rheumatic iritis, in fact, it is often with difficulty that they are differentiated. In each variety, as a rule but one eye at a time is affected, and the tendency to recur is characteristic of both the rheumatic and gouty types. In this same type of cases may be mentioned the iritis at times associated with arthritis deformans; and also the iritis of a chronic type with vitreous complications, sometimes observed in children with gouty ancestry.

Serous iritis, which is really a cyclitis, may, among many other causes, be due to rheumatism. The characteristic symptoms are: A deepened anterior chamber, a slightly dilated pupil, slight pericorneal injection, deposits on the posterior layer of the cornea, (Descemet's membrane), cloudy

aqueous, slight plus tension in the early stages, opacitis in the vitreous and more or less failure of vision according to the severity of the disease. The choroid may be affected at the same time.

Treatment. When due to rheumatism, the same treatment as in rheumatic iritis, except some precautions should be taken in using atropin, especially if there is a decided tendency to plus tension of the eye.

As a typical example of iritis due to chronic rheumatism I append the following case:

S. J. D., aet. 27, May 13, 1910. History: When first seen by me the patient's right eye had been treated for a week for "pink eye." The eye continued to get worse and became so painful that he could not sleep. There was no history of syphilis at all, and only an indefinite one of rheumatism. Patient was of medium height and weighed about 150 pounds. Condition of eye: The right eye was very red, the pupil contracted and somewhat irregular, iris muddy and edematous in appearance; anterior chamber deep and aqueous hazy, intense pain and marked photophobia; vision much reduced. Left eye, normal in every way and vision 20/15.

The treatment given was as outlined above under iritis. July 19, 1911, patient had an attack of iritis in the left eye from which he recovered in about four weeks' time under similar treatment, as was given in previous attack. August 31, 1914, a second attack developed in left eye, with intense pain; not only was the iris muddy and edematous but there were deposits on Descemet's membrane, and the anterior chamber deep and the aqueous cloudy. Patient has a chronic arthritis in left knee which developed during an attack of iritis, previous to this one, and while he was tak-

ing baths at Mt. Clemens, Mich.

Local treatment to the eye was similar to that given in the previous attacks. General treatment, salicylates in full doses by the mouth, and in addition in large doses in emulsion by the rectum, in order to get full and quick effect. The knee was baked by hot-air apparatus. It required five weeks to recover, but vision is normal now, 20/15, and the pupil active.

April 13, 1915, slight attack again in left eye, which lasted but ten days. Sent patient to Michigan for the baths. May 24, 1915, has returned from Michigan, eye is quiet. Still has enlarged left knee-joint. I may say that several Wassermann tests all proved negative, and all the tuberculin tests were negative.

This is evidently a clear case of rheumatic iritis with involvement of the ciliary body to a slight extent, as evidenced by the descemetitis. Under massive doses of salicylate of soda the patient got relief.

The patient was very tolerant to drugs, atropin in two per cent. solution being dropped into the eye as frequently as eight or ten times in twenty-four hours, for two or three weeks at a time—dionin in ten per cent. solution dropped in the eye twice a day having but little effect. Salicylates, at times were given, a grain to a pound body-weight, almost up to the full weight of the patient.

Keratitis. Keratitis both of the punctate and of the parenchymatous type may be due to rheumatism, but clinically not to be distinguished from the same disease when the result of syphilis. They are apt to be more severe when of rheumatic origin, but the diagnosis often must be arrived at by means of exclusion tests and by therapeutic measures.

Scleritis, Episcleritis and Sclerokeratitis.

Until within recent years scleritis, episcleritis and sclerokeratitis were in most instances thought to be the result of either rheumatism or syphilis, the diagnosis being arrived at by the history given and confirmed or negated by the treatment.

The most important contribution as to etiology in this class of cases in the last few years is in a paper² by Verhoeff of Boston. He found in these cases, especially when attended with nodular formation, that tuberculosis was the cause. With the tuberculin and Wassermann test at our command, but few of these cases are now left to be included under rheumatism as a cause; while a limited number of the cases must be put down to faulty metabolism.

The diagnosis of rheumatic scleritis, episcleritis or sclerokeratitis having been made, antirheumatic treatment energetically carried out should be instituted. Massive doses of salicylate of soda, hot baths, diaphoresis, etc., in addition to the local treatment.

Optic Neuritis. While a few cases of optic neuritis have been attributed to rheumatism they are so rare as to be negligible. Knies⁴ states that he had found reports of but two such cases in the literature for a space of twenty years.

Ocular Paralysis. Here again, rheumatism is often given as the cause of the trouble when in reality it can not be demonstrated. By exclusion tests and the history of the case, together with the assistance of therapeutics the correct diagnosis may be arrived at. However, in these cases, even with the most thorough tests, we are often left in doubt as to the cause.

Embolism. Rheumatism may be the indirect cause of embolism of the retinal vessels of the eye, ending in complete blindness at times.

Poynton and Paine have by their inves-

tigations shown that acute rheumatism is an infectious disease. And the same micro-organism, or organisms similar in character, which cause rheumatism, may be the cause of endocarditis. In fact Rosenow³ has shown that the micro-organisms which cause articular rheumatism and endocarditis may be changed, both in a morphologic and in a cultural way, from one into the other simply by altering the oxygen pressure in the culture mediums. And even the inoculation characteristics of the micro-organism are often similar in character.

Knies⁴ states that "rheumatic endocarditis is one of the most frequent causes of embolic processes in the eyes and brain particularly of benign emboli which act mechanically and excite very little or no inflammation."

I may say, however, so far as the vision or usefulness of the eye is concerned, if the central retinal artery is involved it matters little whether the embolus is benign or infectious, as the sight is lost. Fortunately such cases (embolus of the central retinal artery) are very rare. I have had one such case in which the sight of the eye was completely lost with atrophy of the optic nerve following; and six months later the patient succumbed to endocarditis which was supposedly of a rheumatic origin. Treatment of the eye affection is of little or no avail when an embolus is lodged in the central retinal artery.

Treatment. It is in regard to one feature of the treatment of rheumatoid affections of the eye that I wish to call special attention. The diagnosis having been made, my method is to begin with massive doses of salicylate of soda, giving it both by the mouth and the rectum, and in severe cases of iritis or cyclitis, carrying the dose up to a grain for each pound of body weight of

the patient, as has been suggested by Gifford of Omaha in cases of sympathetic inflammation of the eye. At times, I give aspirin (5 gr. doses, four times a day) by the mouth and salicylate of soda in emulsion by the rectum, carrying the dose up to toleration. The heart and general condition of the patient should be closely watched when giving the very large doses of the salicylates, and the patient kept in bed. The retention enemas are given twice a day. The soda salicylate which is to be given in emulsion should first be dissolved in water, then the mucilago acacia added later—about three or four ounces of the solution is large enough quantity of fluid to be retained in the rectum without distress. The local treatment to be followed in the rheumatoid affections of the eye is similar to that given when caused by syphilis.

Vaccine Treatment. So far I have had no personal experience with the vaccine treatment in these cases. However, from the reports of such splendid results obtained by those who have used the vaccines in chronic rheumatic affections, especially in obstinate cases, I am convinced, in recurrent iritis, which is characteristic in rheumatism, the vaccines should be used. If used with care, and not at too frequent intervals, beginning with small doses, they may be used with entire safety. Horace Greeley has emphasized these two points; and he and other clinicians have reported excellent results in chronic rheumatism by the vaccine treatment.

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RHEUMATISM IN RELATION TO
EAR AFFECTIONS.

BY

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Poynton and Paine¹ in their researches on rheumatism have succeeded in isolating from cases of rheumatic fever a diplococcus belonging to the streptococcus group. By the intravenous injection of this organism they have been able to produce experimentally arthritis, endocarditis and appendicitis. This goes far to establish the infectiousness of rheumatism and to prove that when this particular diplococcus once enters the system it attains a pathological potentiality to invade the various organs and tissues of the host. Furthermore, they have shown this organism does not always confine its activities to the individual primarily invaded but in rare instances the infection may be transmitted directly through the placental circulation from the mother to the fetus *in utero*. In a case of acute rheumatism in the mother the presence of the infection was demonstrated on the mitral valves of the child's heart a brief period after its birth.

Furthermore, Poynton and Paine's researches, together with those of many other investigators along similar lines, notably Dungern, Schneider, Rosenow, Billings, etc., also indicate that rheumatism in its widespread pathological manifestations in the joints, heart, blood vessels, mucous surfaces, and in fact most of the body tissues, is due in a great majority of cases to some variety of streptococcus infection.

Greeley², in discussing the cause and vaccine treatment of chronic rheumatism, claims that animal experimentation, and clinical conditions in man have proven that

"when the virulence of the invading organism of infection is not greatly in excess of the host's power of resistance foci of infection may be established in localities whose blood supply is restricted, arguing that at such points individual cell nutrition is at the lowest and the protection afforded by the blood enzymes is least." Consequently the cardiac valves and the joints, the latter particularly in adults, offer a favorable site for the trespass of streptococci floating around in the circulation, which is at a low ebb in these regions.

Local infection being based on the premises of restricted circulation the assumption is plausible that the minute joints of the ossicula of the middle ear as well as the labyrinthine intricacies of the inner ear offer favorable nooks and recesses for the invasion of streptococci. Moreover, clinical conditions bear ample evidence that of the various organs and tissues affected by the rheumatic infection the ear has not proven the least vulnerable, particularly the middle and inner ear, on account of their complex structure—nerve, vascular and osseous.

The relation of rheumatism to ear affections, from an etiological view point, may be conveniently discussed under these heads:

1. Diseases of the Auricle and External Auditory Meatus.
2. Diseases of the Middle Ear.
3. Diseases of the Inner Ear.

RHEUMATISM IN RELATION TO DISEASES OF THE AURICLE AND EXTERNAL AUDITORY MEATUS.

Eczema of the auricle and meatus almost invariably is preceded or accompanied by some constitutional condition, often rheumatic, as a predisposing cause. Among the local causes, exciting suppurative dis-

charges from the tympanic cavity are the more frequent. Rohrer has been able to produce eczema experimentally in animals by inoculations of diplococci taken from the serum of the vesicles of eczema and herpes. A permanent cure is best effected by attacking the infection from within and without—tonics and antirheumatic remedies internally, combined with antiseptic local measures—as solutions of salicylic acid, silver nitrate, or ointments of creolin and yellow oxide of mercury.

Herpes. Recent investigations, by Rosenow and Oftedal³, also Sunde⁴ have confirmed those of Hunt⁵, Head and Campbell, that the pathological lesions in herpes zoster are due to a microbic origin affecting the posterior root ganglia corresponding to the area of the zoster zone. Furthermore, Rosenow has shown that streptococci from different localities, including those from the articular exudate in rheumatic arthritis, when injected intravenously, have an elective tendency to localize in the tissues from which they were taken. In a series of experiments on rabbits herpes of the tongue and lips and the corresponding ganglia were produced by intravenous injections of streptococci taken from the tonsils, pyorrheal foci, etc. Said experiments offer rather direct evidence not only of the possible but probable etiological relation of rheumatism to herpes zoster oticus and in other regions of the body. Indirect evidence to the same conclusion is that attacks of herpes like rheumatism, may be precipitated by exposure to cold. When the geniculate ganglion is attacked, the infection may be sufficiently intense as to involve the entire facial and auditory nerves, producing facial palsy in the former incidence and deafness and Menière's disease in the latter contingency. The treatment of herpes

should be constitutional and local with the view of combatting both the systemic and local infections. Liberal doses of urotropin, well diluted, should be administered until the system is saturated. The vesicles should be ruptured and the surfaces dusted with orthoform or calomel.

Furunculosis of the External Meatus. The association of rheumatism and furunculosis is so frequent doubtless the two affections bear a close etiological relation. The exciting cause is some local infection. In the treatment of furunculosis as well as the diffuse inflammations of the meatus, too much reliance has been placed by us on purely local measures, with the consequence of frequent periodical returns. Where employed, autogenous vaccines have proven most efficient in many cases, particularly when combined with local anti-septic applications.

RHEUMATISM IN DISEASES OF THE MIDDLE EAR.

Among the earlier investigators of rheumatism in relation to the ear may be mentioned Harvey, O. Wolf and Buck, who believed that rheumatism exercised a direct influence in both acute and chronic ear conditions. Harvey states that the ear affections in rheumatism are manifested earlier than are eye affections, the fibrous tissues suffering first and the nerves later.

Recent investigators have demonstrated that nine-tenths of rheumatic arthritic inflammations, whether acute or chronic, are the result of infection by the streptococcus, though the particular type of same may be modified by the duration of its habitual as well as constitutional and local conditions peculiar to the individual host.

Greeley argues that the predilection of the streptococcus for the joints is on ac-

count of the restricted blood supply to these localities and that "the slight growth permitted to such an organism amid its surroundings beneath the cartilages or within, perhaps, the ligaments of the joints, often may produce no symptoms. These appear just in proportion as the tissues react—a slight or no reaction is consistent with the maintenance *in situ* of the bacterium which would be otherwise destroyed." Therefore, with the marked restricted vascular supply in the tympanum, small wonder that the rheumatic streptococcus parasites should favor the delicate articulations of its ossicula. And notwithstanding, that their development and activity may be so slight as not to manifest arthritic symptoms *per se* yet they may and do cause sufficient infiltration and thickening in the joints and neighboring tissues as to markedly mar or destroy their auditory function—the conduction of sound.

Viewed, then, in the light of recent investigations, we must regard the pathology of chronic middle ear catarrh, in many instances, as the result of a streptococcus infection. How futile, therefore, are the present methods of treatment of this condition is evident by its intractability. The remedy that seems to offer most to arrest the progress of the disease is some form of vaccine similar to that administered in chronic rheumatic infections. This with air-massage of the drum and stimulating vapor inflations into the tympanum to encourage local circulation will, I believe, be more and more relied upon in the future in our efforts to restore the functions of the middle ear.

RHEUMATISM IN RELATION TO AFFECTIONS OF THE INNER EAR.

Otosclerosis. We must confess that we have no definite knowledge of either the

predisposing or exciting causes of otosclerosis, whether involving tympanic structures or the labyrinthine capsule proper.

Gray's⁶ hypothesis associates it with a failure of the local blood supply due perhaps to some debilitating systemic condition. As rheumatism predilects localities of limited blood supply the inference is plausible that there may be an indirect etiological relation. After the dense bony labyrinthine capsule has been absorbed and replaced by the spongy bone tissue characteristic of the disease it is obvious that treatment of any kind is futile.

PARALYSIS OF THE AUDITORY NERVE.

Hovell⁷, states that the auditory nerve is more readily affected by poisons circulating with the blood than any other nerve of special sense, affections of the optic gustatory, and olfactory nerves are seldom associated with infectious diseases.

While a few authentic cases of rheumatic paralysis of the acoustic nerve are reported they are rare. Hammerschlag⁸ made a collection of fourteen cases. Politzer⁹, also, reports a case, and cites the case reported by Bing¹⁰ in which the cochlear portion alone of the auditory nerve was involved.

Personally I have seen but one case, and he came under my observation just recently. J. G., aet. 48, born in Ireland, came to this country twenty-four years ago. Family history of rheumatism on paternal side. Personal history of mild muscular rheumatism since he can remember. No history of syphilis, tuberculosis nor malaria. No history of vertigo nor of the Menière's syndrome at any time. Eustachian tube and tympanum normal. In the last few years he has noticed gradual and increasing loss of hearing until now he is totally deaf in

the left ear save a small tone-island in the extreme upper scale ranging from 7.50 to 11.40 in the Galton whistle tests.

The static labyrinth also is involved and reacts but slightly—only five seconds by the caloric test, even when cold water is used, and but three seconds' reaction to the turning test.

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Diabetes and Surgery.—Dr. E. H. Riskey (*Bost. Med. and Surg. Jour.*, Jan. 21, 1915) lays down the following rules in regard to operations on diabetics: (a) A thorough examination of the urine must be made in every case, especially for the detection of acetone and diacetic acid. (b) The total amount of ammonia must always be estimated. No operation except of the extremest emergency should be performed if there is one gram of ammonia excreted in 24 hours, until this has been reduced to the normal amount, .759 gm. (c) An operation should be postponed should there be acetone or diacetic acid, even if the amount of ammonia is normal. (d) Much albumen in the urine is a contra-indication to operation and even in small amounts is of bad prognostic import.—*Int. Jour. of Surgery*.

TREATMENT OF THE ARTHRITIC DIATHESIS BY ELECTRICITY, LIGHT, ROENTGEN RAYS AND RADIUM.

BY

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The *arthritic diathesis* in its protean forms is the subject of much of the effort of the specialist in electricity, light, Roentgen rays and radium. There are many cases which are difficult to classify under the name of one disease or another. And again there are many individual cases to which the same name would be given which do not all require or receive benefit from the same treatment. In no other department of medical work is it so true that we are to treat the individual patient. We have to realize that John Smith with rheumatoid arthritis is just as different from every other person with rheumatoid arthritis, as John Smith well is different from every other well person.

To go a little further afield for an example of the difference between individuals with the same anatomic lesion, I was called when ambulance surgeon to two cases of fracture of the femur occurring upon the same day. One man was writhing in agony upon the ground while the other was sitting upon a barrel with the distal half of the femur hanging at a right angle to the proximal half and showing no evidence of severe pain.

Now with two of our arthritic patients the X-ray may show the same lesions or the same absence of lesions, demonstrable in this way, without our being able to say that they both have the same objective and sub-

jective symptoms and more especially that the same treatment will be best for both.

Certain general principles are important and may require the coöperation of the general physician. Many arthritic cases have intestinal autointoxication as a persistent underlying cause and may require a daily laxative temporarily or for their entire lives and perhaps a meat free diet temporarily and perhaps such an intestinal antiseptic as a combination of urotropin and benzoate of soda temporarily. These measures alone may fail to accomplish the purpose but as an adjunct to the appropriate special treatment they are invaluable.

The author finds it helpful to consider the different electrical and similar therapeutic means at our command and their application for the manifestations of the arthritic diathesis which are strikingly amenable to them. He prefers this to the categorical classification of the various forms of gout, rheumatism, rheumatic gout, and neuritis in which this diathesis manifests itself in different individuals.

Incandescent electric light is one of the simplest of these therapeutic agents. For local use one or more powerful bulbs provided with a reflector apply light and so much radiant heat that the patient usually has to twist and turn. Too long and too strong an exposure at one place will produce redness and even blistering, which is to be avoided although not so painful as from any other kind of a burn. As a local application this is perfectly splendid for cases with red, swollen, shiny and very painful finger joints with pain going up into the shoulder and difficult to differentiate as gout or neuritis. The greatest benefit in such cases is from so intense an application that the finger-nails have to be covered to protect the quick from the radiant heat.

I generally let the patient regulate the distance and consequently the intensity. The same local application forms an essential part of the treatment of sciatica which it is usually possible to cure, and of the chronic joint inflammations with bony deposits and deformity designated as rheumatoid arthritis. For the latter disease the X-ray and an application of high frequency currents known as diathermy, are better than the more superficial application by the incandescent lamp.

A general *electric light bath* in a hot air cabinet is excellent in every manifestation of the arthritic diathesis. It should excite profound perspiration and care should be taken that the patient does not catch cold afterward. This general treatment combines very well with the local treatment which is next to be considered.

High frequency currents from the Oudin or similar resonator applied through a glass vacuum electrode exhausted to the *ultra violet ray* degree of about 1/1000 atmosphere are the main reliance in many arthritic cases. When the current is turned on and the electrode applied lightly to the surface of the body in a darkened room the presence of the ultra violet ray may be shown by fluorescence excited in a piece of willemite held near the bulb. At the same time a shower of sparklets may be seen passing to the skin from portions of the bulb not directly in contact with the body. Sparks passing through the air in the presence of the ultra violet ray generate ozone and nitrogen pentoxide. These may be smelt upon the skin at once and sometimes for hours afterward. Ozone, a very active form of oxygen is absorbed by the skin and this absorption is hastened by the electric current. A principal morbid factor in arthritic cases is an incomplete oxida-

tion of organic compounds resulting, for instance, in converting nitrogenous substances into uric acid which is much less soluble than the completely oxidized substance urea. The uric acid instead of being dissolved in the blood and carried away to be eliminated by the kidneys remains as an insoluble irritating deposit in the joint, nerve and other tissues. The author has always attributed the benefit from this treatment partly to the more active local oxidation attendant upon the introduction of ozone. Other factors are counterirritation, which may be regulated by varying the amount of spark effect; and the electric current itself which is perhaps 100 to 200 milliamperes and always many times stronger than was ever possible with galvanic or faradic currents.

The range of applicability of this method of treatment is so great that watching the work in an electrotherapeutic laboratory one might almost say that it was the best thing for most cases of the arthritic diathesis. Cases of neuritis sometimes yield to this treatment in a marvelous manner; like a patient of the author's who had been sick in bed practically all the time for about two and a half years with sciatica and neuritis of the spinal and anterior crural nerves. The mildest treatment was applied as she was a delicate little old lady. After the second treatment she went to a shop for the first time in seven months, and after the fourth treatment she went to her son's wedding in a city a day's journey away. She received seven treatments in the course of two or three weeks and at the end of that time had not an ache or a pain; and she has continued well for the eight years which have elapsed. The same magical improvement sometimes attends this application in cases of acute gout. Other cases of the arthritic diathesis with one or more chronically en-

larged and somewhat deformed and exceedingly painful joints show decided improvement in a few days, apparently from local stimulation, and then follows a period of lack of progress and the patient may think even of retrogression. During this time the patient is in a slough of despondency through which it requires all the encouragement of the family physician and the electrotherapist to persuade the patient to continue the treatment. When once the constitutional effect begins, however, the patient begins to make steady progress and a cure is effected. The cases in which the X-ray shows no special bony lesions are always regarded as probably those most certain to be benefited. Of the others we know that some can be wonderfully improved and that others do not seem to be much influenced by high frequency treatment from vacuum electrodes. Some of the latter yield good results with diathermy.

Diathermy, also called thermopenetration, is a bipolar application of high frequency currents from two metal or wet electrodes placed for example at opposite sides of a joint in exceedingly good contact with the skin and transmitting a current of several hundred or even one thousand milliamperes. A current of this strength generates heat in the tissues traversed just as it would if passed through the platinum of a galvano-cautery or through the filament of an incandescent lamp. The interior of a joint or other tissues may undergo a rise in temperature of several degrees Fahrenheit which is not obtainable from any external application of heat. The circulating blood carries away the heat applied externally, while with electricity applied in this way the heat is actually generated in the depths of the tissues as well as near the surface. And in this case the circulating blood

merely serves to prevent the tissues from becoming too hot. Applied to a piece of beefsteak where there is no circulation to carry off an excess of heat, the meat is quickly cooked and chiefly from within outward. From this experiment it is seen that a certain amount of experience and judgment are necessary to the safe and effective application of this method. One wants to do some good and must be sure not to do any harm. A temporary redness of the entire surface in contact with the electrode is usual and proper. And the patient should be trained to give notice of too great warmth when the current has been turned on for a few minutes. The electrodes may then be moved to other locations. But an intense burning at one small spot indicates that too much of the current passes through this small area instead of being distributed over an area some inches in diameter. This may occur with wet electrodes from imperfect covering of the metal by the wet felt, and is easily remedied. Diathermy will actually cause the absorption of gouty deposits; and is effective in some very obstinate cases of neuritis; and often improves cases of rheumatoid arthritis, especially in regard to pain.

Vibration is an invaluable adjunct to the previously described methods. For the general arthritic diathesis, vibration applied up and down both sides of the spine is supposed to stimulate the posterior roots of the spinal nerves and exert a reflex effect upon all the vital processes in the organs to which the anterior roots are distributed. Vibration along the course of the colon assists in regulating the bowels and also has a reflex effect through the sympathetic nerves. In a very great variety of cases it is the author's practice to apply the high frequency current vacuum electrode over

one fourth the surface of the body, this area including the local lesions, and the vibrator up and down the spine and over the abdomen.

The X-ray of course passes through every tissue and produces an effect in the depths as well as upon the surface. A familiar demonstration of this is when the X-ray is applied to the long bones in a case of leukemia. The X-ray acts upon the blood-forming bone marrow and produces a marvelous reduction in the number of white cells circulating in the blood. A similar wonderful effect results from the application of the X-ray to a tubercular joint. It is upon the same principle that the X-ray is applied to a joint affected by rheumatoid arthritis, and some cases are cured while others do not seem to be much benefited by it. Modern methods make the application more effective than formerly. The employment of the Coolidge X-ray tube enables one to regulate the degree of penetration and keep it perfectly uniform for any length of time instead of the vacuum undergoing radical changes from the tube over-heating during a long exposure. The use of an aluminum filter say 3 m. m. thick cuts off rays which would be absorbed by the skin and produce a burning effect without any deep effect and which by their presence used to greatly limit the deep benefit it was possible to produce. The cross-fire method of applying the X-ray from different directions so as not to expose the same area of skin affords an additional means of securing all the deep effect that may be desired without injury to the skin.

Radium has lately become known to be of the very greatest importance in the treatment of the arthritic diathesis. Its effect in certain natural waters is thought to be a great factor in the benefit produced by many

famous baths and drink cures. These natural waters as a rule do not contain radium itself but are only radio-active by reason of their containing the emanation from radium. They quickly lose their potency and except right at the spring the natural waters are not sufficiently radio-active to produce any benefit. Ordinary water may be charged, however, by placing in it a small amount of an insoluble salt of radium incorporated in an unglazed tile. The water should completely fill the glass stoppered bottle leaving no air space and allowing 24 hours for charging. The patient should usually drink about 1000 Mache units of radium emanation daily. This constitutional treatment is marvelously beneficial in arthritic cases with the most diverse local manifestations. A patient of the author's was a lady seventy years old and very stout who for years had suffered a great deal of pain in the entire distribution of both sciatic nerves and the lower part of the back and the front of the thighs. Massage by a skilled operator gave a certain amount of relief; and when treatment by high frequency currents and vibration was added, still further improvement took place. Still for a couple of years she suffered quite a good deal of pain in spite of regular treatment. On adding the treatment by drinking radium water there was within four days a different condition from anything experienced for four or five years; and after six weeks the pain was gone. This history has been repeated in many cases of sciatica among the author's acquaintance. Obstinate joint troubles sometimes afford an equal indication for the constitutional effect of radium. But sometimes the local application of a tremendously greater strength of radium is indicated. Such a case of the author's was a man with

pain in the region of the external condyle of the humerus and great disability of the elbow. The X-ray showed a small bony growth from the external condyle. Treatment was by the application of 20 milligrams of a radium salt of two million activity, over the general region of the bony growth but not always at the same spot, so as not to have too great an effect upon the skin. Progress was tedious but quite uniform and in several months the elbow was strong and free from pain.

Generally speaking, the methods referred to have removed many different kinds of patients from the category of incurable sufferers. And they give great relief from pain without the undesirable effects of anodyne drugs and with the greatest constitutional benefit, even in cases where a cure is impossible.

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RADIUM AND RHEUMATISM.

BY

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The alignment of radium and rheumatism can scarcely be made by rule of thumb.

There is rheumatism: with its polymorphic pathology and no unifying coefficient, and here is radium: fresh-flung, subtle, evasive, mystifying, unique.

And yet this problem is of the earth, earthy. No more desperate a situation than confronts us all along the line in medicine! For the art of medicine is still but an infant and hybrid science, in swaddling clothes, and its practice preponderatingly empirical. There is many a *non-sequitur* between laboratory wisdom and the application of it.

In respect to rheumatism, science is just now teaching that an infective procedure lurks back of all cases, and many are making this their gospel and viewing the treatment accordingly. How we take this matter has an important bearing on the question of radium treatment, for, in proportion as we lean to the infection side, shall we find difficulty perhaps in accepting radium's influence over the condition, so long as some supposed source of infection is not detected and disposed of.

An infection causation may be imputed with greatest reasonableness to *acute* cases because of much resemblance in features to known infective processes. Nevertheless even here the clinician of experience will have to confess to being staggered by many doubts. If the source of infection is always in the tonsils and if infection's most earnest partisan can speak of a type and constancy of cases, then it must be replied that we have to reckon with great aberrancy. For no single thing in medicine is more typical than acute follicular tonsillitis without the slightest suspicion of joint symptoms. We are confronted too with many typical cases in which there is no preliminary stage of incubation but a downright avalanche of joint symptoms. One of the worst of general articular rheumatisms we ever saw, followed directly on being drenched in a rain storm. There was no rheumatism in the family, there was no rheumatism before, nor has there been the slightest suggestion in the twenty years subsequently. In the same way if an ordinary cold is infectious—wetting the feet still remains the royal road to a rheumy state.

With *chronic conditions* of so-called rheumatism the reasoning has to be still more strained. There are no doubt rheumatic conditions (consisting chiefly of pain) that

have been remedied apparently by removal of a tonsil, but what we need is not so much a good, nice, unctious piece of science, as a "very present help in time of trouble." Let the theorists report all the cases in which removal of a suspected source has utterly failed to dispose of the troubles. A pronounced enthusiast for the scientific view was urged to use radium in a chronic rheumatism case. "No," he replied, "I shall take out an extremely pussy tonsil and the joint symptom will be relieved." The patient continued seven months in a hospital with but slight benefit so far as friends could observe. What, for a result, the physician claimed, I cannot say.

Again, under the chronic-focus-of-infection theory how shall we dispose of the vast number of cases in which no possible source of infection can be discovered? Or, *per contra*, explain the great numbers of real hot-beds of infection that do not produce rheumatism? Does not the number of innocent pus-holding tonsils greatly preponderate over the incendiary?

A blanket theory of infection coincides with a tendency to draw on the environment as the ammunition magazine and permit nothing to originate *de novo* or endogenously (even the intestine is the outside turned in). Metabolism shall play no rôle, neither fog, nor the dews of heaven nor weather's wrinkles. But pretty as the theory is, it has us reconciling discordant elements. Metabolic, like trophic changes, may be secondary, but even that might be only to say, according to man's limited ability to measure. Nature is the original chemist and still has plenty of secrets up her sleeve. The close relationship of rheumatism to gout, which we concede to be a metabolic disease, points an analogy.

The bearing of all these considerations

is on the part that radium plays in the therapeutics. Rheumatism viewed as the extremist would have it, always inferentially at least infectious, would present a far more difficult problem to radium than in its everyday clinical aspects of pain, infiltration, congestion, impaired function. To the patient the torturing member, active swelling, stiffening up with tempestuous weather is the supreme matter in hand.

Thus for the practical purposes of radium, chronic rheumatism is inflammatory and whatever our attitude towards the theory of infection, it must be granted that the task of the physician is for the most part to combat the conditions mentioned. It may be that they represent only the trenches on the deserted battle-field, about which an active contest has raged, but they are the most obvious things.

This figure of speech, which represents the natural forces of the system arrayed against the attack and hard put to or even worsted, fits admirably the exposition of the part that radium plays. For radium is to be looked upon as playing just the rôle of reinforcing the powers and processes of the system. Whether we are using radium externally or internally, the impression which it is desirable to make is essentially biologic i. e., morbidity is to be made to reform itself by a process originating in its own bailiwick through a biologic recoil on the part of the tissues.

This conception of radium as a force ought to be kept clearly in focus, not only because it is fundamental in any explanation of its action, but because as physicians it is necessary, in our conception of this unique therapeutics, to break the shackles of long-time thinking in terms of drugs and chemicals.

Radium is distinguished by its instability

—in other words, by its refusal to stay put —on the contrary it insists upon breaking up as to its atoms: something being clipped off; that something being an alpha particle —the result is the evolution of a second radio-element which in turn goes through an identical change. This change of one radio-element into another is variously called its decay, its transmutation or, as I suggest, its transubstantiation. The break-up of atoms in a radio-element, being an explosive process, is expressed by energy, kinetic and chemical, and by heat. Thus a series of radio-elements is evolved with a descending scale of atomic weights and between these ever-quaking elements a relationship of equilibrium is established through the entire gamut so that the decay of the last, the final splutter-out of force, exactly corresponds to the feed from the original radium.

Devoted to internal application, the use of radium is often spoken of as the use of the emanation. But the potentiality of radium is conditioned upon the evolution of emanation; in the case of a solid (salt) the emanation being occluded in it. The emanation being next to radium i. e., the highest in the class, is naturally possessed of the most power; but all the elements in the series, even the lower ones have been investigated both experimentally and therapeutically.

Thus we see that in making use of radium internally we are dealing with a force. Whether we employ a soluble salt or a solution of the emanation, or inhale the emanation, the consistent object is to get the emanation into the blood (in which it is more soluble than in water); once there it must by its transmutation liberate rays and energy, to the influence of which all the tissues and fluids of the body are exposed.

An electrical force in solution certainly offers something of a novelty, but stranger still, here is a force which sets itself off. Of paramount importance from the point of view of therapeutics is, however, the supreme fact, that *no other known agent is capable of inhibiting the activity of radium.*

Contrast this with anything that we have heretofore used as a therapeutic agent. Drugs and chemicals we first test out in man's laboratory or by experimenting on animals, and then put them through nature's laboratory, where at the first go-off a most demoralizing disaster may be produced by her activities, while the tracing of the drug is made most difficult.

In the case of radium emanation we face the remarkable fact that it passes into the system unchanged and that its march can be followed and itself and its related elements recovered, through a single and trustworthy test viz.,—the electrical.

Thus radium emanation is a counterpart on the internal side of electrotherapeutics, —a something akin to light therapy.

In the above facts we find a justification for the assumption that the action of radium internally will be along the same lines as its experimental side. Outside the body radium emanation has a most remarkable range of action.

Emanation is toxic to animals, and destructive to vegetable life, but non-toxic to man, and a healthy individual is not affected by a dose to which disease reacts. Thus emanation kills the germs of plants, shrivels leaves, destroys hair, nails, ovary, testicle, coagulates albumen of egg, discolorizes the yolk (destruction of lecithin), but it wields many other influences that evidently cut a large figure in its therapeutic quantivalence.

By its mere presence emanation proves itself possessed of catalytic powers, i. e., capacity to start or intensify reaction between two other agents. Thus:—

Air and emanation in a tube—the product is nitrous oxide. (Cf. the synthetic production of nitre from the atmosphere by electricity).

Oxygen and emanation—the product is ozone.

Iodoform and emanation—iodine.

All the various fermentations are actively goaded along *in vitro* by emanation—gastric and pancreatic, glycolytic and diastatic, lactic and yeast. It also stimulates autolysis. Of two pieces of cancer tissue in water, the one exposed to radium emanation decays seven times quicker than the other.

But the activity of ferments in nature's laboratory must be much greater than in a test tube; cf. the rapid synthesis of proteids from the food. Therefore a much smaller amount of chemical energy is necessary in the body. Hence the entire naturalness of the conception of small quantities of emanation as an active agent. In this connection, compare the fact that one microgram of adrenalin will affect blood pressure. Every process concerned in metabolism in the body must have its specific ferment. Emanation may be looked upon as a strong (general) ferment. Entering the blood it may be absorbed by the colloids (as it is by charcoal); the secondary deposit (metallic) forms a metallic colloid solution analogous to the colloid solution of the metals. This activates the blood, and in consequence all processes of the body are activated.

Professor Hertwig finds that the blood and lymph cells and the hematopoietic organs are especially affected by radio-activity. Horsley finds that in the nervous sys-

tem changes are mostly vascular.

Obviously of some of these there can be no replica in the body because of the very large quantity of emanation needed. We may not look for the great chemical reactions, such as the electrolysis of water, the splitting of ammonia, or the direct decomposition of organic material, but we are entirely justified in saying that influences referable to its catalytic power and to its control over the enzymes may be counted upon; because effects along these lines are demonstrable with minimal doses.

In *acute rheumatism*, assuming that we have to do with an infective process, emanation possesses characteristics that ought to make it a good weapon with which to battle.

It has in the first place a pronounced affinity for the blood (the battle-ground) and the hematopoietic systems (Horsley), and the active deposit from the emanation Proescher has demonstrated lodges in larger proportion in the bone and bone marrow.

It has been shown that radium emanation increases the phagocytic power of the white corpuscles (Bickel), in which the existence of a digestive ferment is as good as granted.

The whole reaction between emanation and the white corpuscles (in the animal they can be made to disappear) would indicate that the battle of the organism with pathogenic irritants, a contest in which ferments must play an important part, may be powerfully supported by emanation in proper doses.

As to direct destruction of bacteria, much less is to be expected from the small amount of emanation than from the direct rays of radium, which do exercise a powerful bactericidal action. But emanation has been reported to have acted curatively in pus cases,

as e. g., in the pelvis and accessory sinuses.

Finally, in view of the marked anemia so often rapidly produced in acute cases, the very distinctive action of emanation as an hematinic, and its power to produce a very rapid increase of red cells, are not to be left out of the calculation.

If radium is to be used in acute rheumatism the doses must be the largest of all conditions. von Noorden and Falta alone report on cases. Their conclusion is favorable; the emanation may be looked upon as a substitute for the salicylates—some cases were well in one or two days.

These clinicians have gone a step farther and report on several cases of acute pneumonia. Here they thought they observed relief of dyspnea, unusually prompt lysis and surprisingly quick resorption of the exudate.

In *chronic rheumatic processes*, we prefer to consider the infective element, even if assumed in an etiological way, to be quite in abeyance. The inflammatory pathology is the side of importance. Just as in tuberculosis, where the distinction between the tubercular infection *per se* and the inflammatory process set up by it, seems in general to be entirely overlooked.

In this province the physiological action to which we could refer radium's influence would be:

- (1) The influence in increasing carbonic acid output and the exchange of gases.

- (2) Sugar oxidation.

- (3) Increase of urea and uric acid.

- (4) The diuresis.

- (5) The influence on the white corpuscles, especially in the destruction of neutrophiles. The ferments are set free and can dissolve the labile cells of a chronic exudate. As a proof of this action, we have an increase of temperature and the change in the urine. The acute inflammatory irritation produced by the radium brings the chronic process to healing.

This very influence of emanation over chronic and inflammatory processes was part of the original reputation of the springs before emanation was known and they were resorted to in the old days for the cure of exudates and purulent processes following surgery. That emanation can procure the resorption of inflammatory products is illustrated by the following really brilliant case of (diabetic?) neuritis.

Case 1—M. 52—Neuritis—Previous attack eight years ago when in bed four months—present attack seven months duration—severe pain in left arm, requiring anodyne and making nights sleepless—arm markedly swollen, fixed at side, entirely immobile at shoulder (said to fluctuate and has been advised by surgeon to have operation on bursa and joint) fingers glazed and tense—jaundice six weeks ago—good sugar reaction in urine (also four years ago). Two micrograms radium daily with radium compress—on fourth day swelling decidedly reduced—fingers can be wrinkled—bones of elbow showing—arm can be moved somewhat away from the side. From now on steady improvement with rapid subsidence of swelling and pain—back to business in twelve days (had been away six weeks)—in a month rarely pain, arm now discloses atrophy of muscles from disuse.

This case had had much treatment, including vaccines. There could be no gain-saying the effect of the radium. Objectively there was marked swelling which immediately commenced to subside and had in large part disappeared in two weeks. So in the following case:

Case 2—F. 65—Chronic progressive rheumatoid arthritis—all joints involved—enlarged even to twice normal—one and a half years' duration—cannot turn in bed and has to be lifted out—has been fed for six months—complete atrophy of muscles—contraction of ham-strings—parchment condition of skin. Pronounced an "impossible case" by an experienced clinician. Radium by intravenous injection—four of 50 micrograms each, over a period of four months. Immediate improvement showed

itself—able to use both hands in feeding herself on tenth day. Improvement continued steadily with some reactions. In three months got out of bed alone. Seven months from inception of treatment, the hands and feet are free, with much more motion in shoulder and knees. Entire absence of pain in joints. Remarkable improvement has occurred in general condition—color, nutrition of hair and skin (feet again perspire). Gain in weight with a stimulated appetite from the outset. She is able to use a needle. Shoulder joints and knees much freer. As far as joints are concerned could walk but no musculature—there is some developing in arms.

In this case there was from the first an improving tendency which did not culminate for eight months. It will be observed that there was at the outset great enlargement of the joints which, however (and this was of the greatest importance) exacerbated. The joints became practically normal as to size and were free and painless.

The influence of radium on the constitution of the urine may be illustrated by these cases:

Case 3—M. 69—Catheter-life—for a year the solids had been quantivated by a professor of the Harvard Medical School. There was an analysis made immediately previous to taking radium. Two micrograms daily were given for a week. At the end of that time the urea and uric acid showed an increase of fifty per cent. For some reason the radium was omitted, but the physician inquired sometime later if the radium was cumulative, inasmuch as the urea and uric acid and amount had continued to increase and the analysis was satisfactory.

Case 4—F. 70—Interstitial nephritis with marked arteriosclerosis—chronic invalid and confined to room for some years—increasing edema of ankles—decreasing amount of urine. Under radium continuously for three months (about 100 micrograms being taken) the edema disappeared, urine increased from fifteen to forty-five ounces and maintained itself. Urea also was measured and showed increase.

I have had the opportunity of observing

perhaps one hundred miscellaneous cases treated by emanation. Of these, fifty or more were rheumatic, speaking in a general way. In another communication I thought fit to put many of them on record, imperfect as they were in many instances. Here, however, it is proposed merely to resumé general impressions.

So far as the application of emanation is concerned, I hold it to be entirely superfluous to attempt one of those more or less imaginative classifications of chronic rheumatism. If such is ever worth while, in the present state of our knowledge and with so much of debatable ground in signs and symptoms, it serves no purpose in emanation therapy. For with this in hand we address ourselves to the complex as a whole and are entirely unable to predict in advance what our degree of success will be.

In one line of cases, the main feature may be pain. Radium is a great pain-killer but obviously the cause of the pain, involving in turn the question of diagnosis, would become of prime importance.

Case 5—F. 50—Fractured hip in an old withered limb—patient up and about in spite of, and suffered much pain at night—was much relieved by radium which she took for six weeks or more.

Case 6—Phys. 50—Much annoyed and inconvenienced by pain in one hip—orthopedist, after exhaustive examination, called it rheumatism. After a month of radium reports many good days—says radium certainly stirs him up, produces reactionary pain in other joints—distinctly diuretic. After ten weeks' treatment, thinks it has done him good because less acute pain.

Obviously in the latter case there is the possibility of error in diagnosis, as a monarthritides confined to hip is not common.

There must be a sufficient pathology. As in radiation, so in emanation, pathological tissue absorbs the rays in larger proportion. The healthy individual is not affected by

dosage useful in disease. This may be illustrated by the often futile attempt to control the progress of that very insidious form of rheumatoid arthritis which first appears in the phalangeal joints of quite healthy individuals and is perhaps years in developing. These cases seem in my experience rather hard to influence and the management of the treatment proportionately delicate.

The nearer the joint is in resemblance to a subacute stage, the more prospect of success. A joint exacerbating and intermittently active, with a show of periarticular edema, or of effusion, is most amenable to treatment and most promising of success. Per contra, when our pathology deals with endanatomy, obviously our efforts are not to be greatly rewarded. Bare bone will not cover in nor fibrous tissue melt, any more than, in arteriosclerosis, cockscrew arteries will become elastic tubes again.

Just why radium, whether to be used externally or internally should be bequeathed cases that are often in the abomination—of—desolation class is hard to understand. Perhaps some day radium will come into its own,—operable cases for radiation, or fresher cases of rheumatism. Obviously in a case like the following very little is to be expected:

Case 7—F. 35—Infective (?) rheumatism after birth of child—seven years' duration. Chronic progress leading to ankylosis—knees bent to almost right angle (these have been operated on at Johns Hopkins). Right arm has very little motion (from shoulder) so that can just get it to mouth—with left, this is impossible. Fingers distorted—some flexed some extended. One hundred and fifty micrograms radium—three injections over space of three months. Improved after first with mitigation of pain and better nights—wanted another. Three months after instigation of treatment there is little improvement. Is having ten micrograms injected about left elbow. The final verdict was: no result.

In this case the outlook was thought to be almost hopeless and it was understood that the radium was a resort of desperation. A very interesting feature had been the entire absence of enlargement of the joints at any time. The hands were strikingly delicate and the fingers were quite uniform and minus even the bulbous termination of the phalanges.

The reaction to radium emanation ought to be a token of hope. It occurs in from two to ten days after inception of treatment and consists in what might be called "touching up" of the rheumatism. Pain and swelling are aggravated and there may be some temperature. After a generally quick subsidence improvement sets in.

Otherwise is it when a prolonged reaction is maintained. Here the patient seems to be worse and it becomes a question between increasing the dose or leaving off. It is precisely in those cases of dry rheumatoid arthritis of the small joints of the fingers that I have seen such prolonged reaction.

Dosage, Preparations, Administration.

The dosage of radium is usually stated as so many mache units, which represents the electrical measurement of the amount of emanation present. This points to the fact that, internally, nothing much but emanation has been employed. Very few of the springs carry radium itself i. e. are radiferous, and the artificial substitutes have been largely a radio-active water prepared by contact with an insoluble radium salt. But some doubt attaches to a factitiously prepared radio-active water. The emanation occluded in the salt clings tenaciously. With the salt *en masse*, almost none of it is yielded up (Laborde). In a minutely divided state, however, something of it (2-4%) is parted with. Then there is the question of the steady decay of the emanation

and its diffusibility, both of which would direct some suspicion towards the constancy of the radio-activity.

Latterly, however, a soluble radium salt has been made to form the basis of therapeutics. In this case there is always a definite amount of emanation present (the maximum-equilibrium-constant) while the radium salt has an infinite capacity in, and will evolve, emanation during its sojourn in the body. This method would seem by far the most trustworthy and most likely to offer an exact basis for computing dosage. Indeed Loewenthal (*Grundriss*), whose experience has been mostly with emanation alone, expressly endorses a solution of a radium salt with the corresponding emanation evolved within the bottle.

We should, in the case of the salt, have a new element involved viz., that of accumulation. With respect to emanation, it has been pretty conclusively proven that it is not cumulative. The contrary seems to the writer to be true of the soluble salt. He has at least seen enough of postponed and belated results to have come to the belief that these represented the activity of something more than the later elements in the radio-series.

Some recent experiments on elimination of radium (*New York Med. Jour.*, May 1, 1915), seem to point in this direction. Following injection of a radium salt into the blood it was found that after the fourth day the elimination fell to a low level and that a small additional dose exhibited would seem to maintain the equilibrium. The converse of this would say, that a considerable dose continued after this interval would lead to accumulation.

Our experience has been with the solution of a salt. This offers the additional advantage of injection intravenously or

otherwise, in which case the radium is lodged in the circulation, which in any case is its ultimate destination. There is absolutely no reaction to the injection, locally or generally.

Of emanation, vastly discordant amounts have been used. Many of the radio-active waters in the springs were very feeble; so much so that now, after the use of greater strength, observers are inclined to say "psychical" of their earlier results. But the conclusion does not fall so easily. Lazarus is authority for the statement that a much larger proportion of a smaller dose may be demonstrated in the blood. The usual Kreuznach dose is 5,000-15,000 M. U. The London Radium Institute gives not less than 250,000 daily. In London they are handling very bad cases, it is to be remembered. At all events there may be something in the idea that, as in the case of any force, there may easily be an expenditure of a greater quantity than necessary to procure results: with, in the end, wasted ammunition. It is fairly clear in our mind that the dry form demands least, the exudative more, and the acute or subacute most—radium.

Of the solution of a radium salt I have seen results from one microgram daily, four is a good sized quantity and six is getting large, though not necessarily too large. As an initial dose, however, I have seen six produce lassitude, nervous excitation and headache. Intravenously twenty micrograms is something of a dose, to be followed by a similar one in a week and then the effects sustained by the solution, by mouth in reasonable quantities.

The matching up of the radium to the pathology is, however, a delicate matter and demands some study and experience. Cases offer best, according to youth, if "juicy"

in type, and if multiple. Osteophytes, real ankylosis, cartilaginous or osseous changes, offer no hope except of mitigation of pain or general improvement. Pseudo-ankylosis from fibroid thickening is to be thought of, because amenable.

As to results in the cases that I have watched, I hesitate to draw conclusions in figures. The art of window-dressing and dress-parading with figures is not a lost one. Besides, many of the cases were obviously very imperfectly treated; but I may say that very few cases were entirely refractory and in such as the radium was well tried out, results were distinctly encouraging.

A radium treatment, it cannot be too much insisted upon, takes patience and—radium. The initial treatment should last from six weeks to three months. In a well-entrenched pathology we should not expect much change in a short time. It is also to be remembered that the effects are often postponed and the maximum improvement does not always coincide with the cessation of the treatment. I advise a repetition of treatment after the expiration of a few months. The likelihood of making improvement permanent is thus enhanced. I also incline to the opinion that it is better to commence with a smaller dose and work up, though much depends on the nature of the case. The latest figures (from the last report of the London Radium Institute) for rheumatoid arthritis or arthritis deformans (and some of the worst cases are purposely included) give: of 168 cases, 91 improved.

Radium has one superlative advantage over drugs, in the treatment of rheumatism. Drugs or chemicals under the head of alteratives are pretty much all depressants. Radium on the contrary is markedly tonic and stimulant; almost universally so. Its

direct action on digestion is very favorable, and by its marked stimulation to the erythrocytes it improves anemia conditions. These last features would make it often worth using even in desperate cases.

Even a "psychical" combined with a tonic effect is worth securing. That was a neat response of a doctor who had been using radium, with obvious improvement, in a case previously under the care of a family doctor and a consultant. It was a question of cessation of treatment and the consultant made the reflection that the patient had secured all the "psychical" effect that was possible. "Yes," said the radium doctor, "but the consultant and the family doctor had the same opportunity that I had to get a 'psychical' effect."

In conclusion, we may repeat that there is nothing hollow or inert about radium. It is an active remedy—knowledge of it is to be cultivated and judgment developed in its use. The wonder is that the profession is showing so little interest in something which comes so well-authenticated and which, if it does anything, would pry us out of that quagmire of helplessness in which rheumatism so often stalls us.

Bilious Attacks.—In some bilious attacks, 1-1000 grain of copper arsenite in hot solution, if taken at fifteen to thirty minute intervals, will prove almost a specific. The indications are: dizziness, flatulence, and alternating constipation and diarrhea.

One full dose of copper arsenite, 1-100 grain followed at fifteen-minute intervals by small doses, 1-1000 grain, will usually stop nausea promptly, except perhaps when caused by cirrhosis of the liver.—*Butler*.

A fine lachrymal probe is the most convenient instrument for sounding the salivary ducts.—*American Journal of Surgery*. . .

ACUTE JOINT INFECTIONS.

BY

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To discuss this subject in its entirety is out of the question in a paper which necessarily must be limited, when it forms part of a symposium on arthritis. I take it, however, that it was the intent of the Editor that I should limit myself to the consideration of acute arthritis of non-traumatic origin, that is, metastatic or infectious arthritis.

This phase of the subject has received considerable attention within the last few years, mainly because it has removed so-called articular rheumatism from the sphere of the unknown into the sphere of the known. The majority of clinicians are now convinced that what has been popularly termed joint rheumatism is not a metabolic affair, but of purely infectious nature and origin, and that belief has led to the widest possible investigation as to the real source of the infection, so that much light has been thrown on the etiology of this form of "rheumatism."

At the outset then it may be said with considerable positiveness, without regard to whether one or more joints are involved in the process, that it is always of infectious origin, and that perhaps trauma, however slight, may have something to do with determining the joint or joints in which the metastatic process makes its appearance. The mere fact that a local focus of infection cannot be found in no way militates against the correctness of the theory of acute metastatic arthritis, and bearing this in mind, careful and observing clinicians have searched indefatigably for the original infectious focus. The appendix, the gall-

bladder, the tubes, the accessory sinuses of the nose, the nose itself, throat, pharynx, teeth, and so forth, and particularly the tonsils, have come in for a great share of investigation as possible sources of infection. Focal infection has been the slogan of the research worker in attempting to find where these bacteria which are subsequently found in the tissues around the joint, and later perhaps in the joint itself, may have lodged originally.

Rosenow and Billings have done more work in this direction than most clinicians and research workers, and the information which we have obtained from their work has been of incalculable value in treating these cases, not only with intelligence, but with a view to getting a good result. That there is a connection between, say, an infected tonsil and an infected or inflamed joint cannot be disputed, because in many cases the same organism can be isolated from the tonsil, the tissues around the joint, and even the blood stream itself. I have just outlined an experimental research into the process of such infections, which will form the bulk of my work this summer, and I hope to be able to show just how these bacteria reach the joint, and what takes place at every stage of the process.

I do not see how anyone can believe in an idiopathic or dietetic arthritis. It is a pathologic impossibility. If we accept the term idiopathic as meaning unknown, then, of course, there may be such a clinical entity as an idiopathic arthritis, but if it is to mean "coming on without known cause," then it must be admitted that it is an impossibility. Personally, I am convinced that these arthritides are always of infectious origin, and that the primary focus is situated in some remote portion of the body. I have seen some cases in which only the

most extended search revealed the source of infection, and by directing the treatment accordingly the patient invariably recovered from the attack without any untoward consequences.

The old term "cryptogenetic" describes well the nature of many of these cases. The source of the infection is a mystery, but, like all mysteries, it can be solved. If these patients are examined carefully, if they are subjected to the various tests, chemical and serologic, and given a careful physical examination, including a thorough roentgenologic study, the original infectious focus can hardly escape detection. I recall vividly one case which passed through the hands of ten or twelve thoroughly competent clinicians, men who are well-known, and yet the infectious focus escaped detection until I made a very careful bacteriologic study of the urine. The fact that this patient's trouble, which had been of eight months' duration and of unabated severity, notwithstanding every form of treatment, yielded within six weeks to the use of an autogenous vaccine may, I believe, be accepted as sufficient proof that the cause of the disturbance was discovered in the urine.

If one follows the clinical history of an arthritis complicating the acute infectious diseases, the conclusion is inevitable that it is a metastatic affair. These arthritides always make their appearance at a certain definite period in the course of the disease. In other words, the time of occurrence of arthritis, the metastatic infection in the joint, is a valuable asset in determining the nature of the infecting organism. For instance, a gonorrheal arthritis nearly always makes its appearance in from eighteen to twenty-two days after the discharge is first seen. The arthritis which so often follows scarlet fever, as a rule, appears from the

eleventh to the sixteenth day after the onset of the initial symptoms of the exanthem, that is, during early convalescence. The arthritis follows rather closely on the heels of the disappearing acute symptoms, so much so that it apparently represents another stage of the disease. It has been described as a complication. It is in reality a sequel.

Why all cases of acute infectious fever are not followed by an arthritis cannot be dwelt on at this time, but the same applies to this sequel, as to any other sequel, that is, it is not always present. Some cases are less severe than others; some of shorter duration than others; other cases have these sequelae, and others do not. Then, again, there are those cases of arthritis which form late metastatic manifestations of bone and joint involvement, such as is seen following typhoid fever. They occur rarely before the fourth week, and one might say never after the eighth week. They appear at just about that period when the intestinal ulcers are supposed to be healed. The arthritis complicating pneumonia does not appear before the crisis unless there is a mixed infection with the streptococcus, in which the streptococcus stands out rather prominently. The streptococcic arthritides always appear very early. They are also much more severe in their clinical course and in their manifestations, are far more difficult to manage, and are more often followed by disastrous results. One needs but to bear in mind the clinical nature of infection anywhere in the body, as caused by different organisms, to be able to determine fairly closely just what organism is involved in any given case. The streptococcic cases come on quickly, with severe symptoms, and, as stated, run a more severe course. The non-streptococcic group

of joint infections are much less severe in their clinical course, although they, too, are often followed by disastrous results.

With regard to those types of acute metastatic arthritis which are not a sequence of an acute infectious disease, and which should interest us most, much can be said. In the main, the occurrence of such an arthritis is easily understood. A patient with necrotic tonsils, or with a dormant infection in any other part of the body, is subjected to trauma or to exposure, such as wetting the feet, chilling the surface of the body, over-exertion or fatigue; the resistance which that individual has developed to his focal infection is lowered, and the spread of the infection may easily take place. It is here that trauma, no matter how slight, plays an enormous rôle, and in nearly all cases a history of trauma, either near or remote, of single or frequent occurrence, can be elicited, not by suggestion, as has been stated by some, but by merely letting the patient tell the story. Joints which are naturally exposed to trauma are most often the seat of these infections. Therefore, one does not meet with a shoulder arthritis very often; and arthritis of the lower extremities is far more common than arthritis of the upper extremities. The joints are subjected to repeated trauma, slight in severity, not immediately productive of any symptoms, or the patient sustains one severe trauma which leaves its mark in the tissues, and thus paves the way for later infection. The late Dr. Senn spoke much of the "*locus minoris resistentiae*," and we must admit that he was right, as he usually was. J. B. Murphy lays great stress on the relationship of trauma to determining the joint which will be the seat of such a metastatic infection. It is these traumatic cases in which usually but one joint is involved. In

the cases where exposure is the exciting cause of the metastasis, many joints are usually involved.

The point which must be emphasized is that the infective micro-organisms have been present in the tissues before the trauma or exposure occurred, that they have lain dormant, that the resistance of the patient's resistance was great enough to prevent an exacerbation of the infectious process under normal conditions, but when this resistance was lowered then metastasis could occur, and its location was determined by the factors discussed above.

I wish to direct attention particularly at this juncture to the gall-bladder, which so often is the seat of an infectious process, which does not manifest itself in any way for a long period of time. A patient who has but recently recovered from some intestinal disturbance of infectious origin usually has some cholecystitis, and often this becomes chronic. I have found in a number of instances that a patient has had an attack of influenza, with marked intestinal symptoms, and that on percussing his gall-bladder and making deep palpation, a positive reaction was obtained, showing conclusively, to my mind, that the gall-bladder was infected, because normal organs and tissues are not particularly sensitive to ordinary finger pressure. Too often the gall-bladder is entirely overlooked as a possible source of the infection. These patients are more often the victims of a multiple arthritis than a single joint involvement. Patients suffering from tonsillar infections and arthritis have been cured of the latter by removal of the tonsils. Removal of an appendix, the seat of a chronic infection, has been followed by equally good results. Drainage of the gall-bladder has relieved patients of many ailments of which they

have complained for years. Therefore, in making an examination in these cases one should not overlook the appendix and the gall-bladder, nor fail to obtain a history of intestinal disease, if such has been present.

The clinical course of all these cases of metastatic arthritis is very much the same. The arthritis is usually initiated by a distinct chill or chilly sensation and pain in the joint or joints into which the metastasis has taken place. In from twelve to thirty-six hours the process usually localizes itself and then definite local symptoms are obtained. Needless to say, the patient also presents constitutional symptoms, such as elevation of temperature, malaise, perhaps some nausea and vomiting, headache, and so forth, the severity of the symptoms varying with the degree of virulence of the infecting organisms. Complaint is made of a sudden severe pain in the joint, perhaps some swelling, tenderness to touch, loss of motion or restriction of motion, and often soon afterward effusion. The course followed is a definite one, characteristic of an infection and the life history of the pathogenic bacteria. The symptoms constitute practically what is called a syndrome, such as occurs in other pathologic processes. They may well be called a syndrome, because they occur so regularly and in so definite an order.

The fact that these infective organisms are always of a high degree of virulence, that is, possessed of great pathogenic qualities, is the reason why these arthritides are so often followed by ankylosis. The tissues are destroyed unless prompt and proper intervention is made. Therefore, the initial chill and the pain in the joint should be accepted as distinct warnings of the nature of the process. This is particularly true when only one or two joints are involved.

In the multiple or polyarticular type of arthritis, a chill may not be present, or so slight that it goes unnoticed, and ankylosis rarely results, although stiffening of the joints due to periarticular disturbances may take place. This type of arthritis is caused by the less virulent varieties of bacteria. The clinical course is less acute and is usually of shorter duration, but there is one type of multiple arthritis in which the micro-organisms concerned are possessed of a high degree of virulence. The chill occurs early, is severe in degree, and the clinical course is correspondingly rapid and progressive, leading to destruction of tissue. It is in such cases, for instance, that the hips, knees, ankles, elbows, fingers, jaws and spine are involved simultaneously, and all the joints become ankylosed, so that the patient is converted into a solid bony mass. Fortunately these cases are few in number, but when they do occur they form pitiable instances of inadequate treatment.

Many observers are inclined to disregard pain in a joint when there is no effusion in the joint cavity. If one follows the pathologic process of these cases, he must speedily be convinced of the fact that these bacteria do not primarily enter the joint, nor do they apparently lodge first in the articular ends of the bones. They invade the periarticular tissues and particularly the outer layer of the fibrous capsule of the joint, in which the lymph and blood vessels are found. It is only by destruction of the inner layer of the capsule, including its mesothelial lining, that the bacteria finally make their way into the joint itself, although the irritation caused by their presence and activity in the tissues first mentioned is responsible for the effusion into the joint.

Space forbids a full discussion of the

pathology of these cases, but let me emphasize one point, and that is that so far as the nature of the process itself is concerned, it is always the same. It follows a distinct and definite course, varying only in degree and duration. It will be recalled that Payr, in his work on neoarthrosis, or what is more widely known in this country as arthroplasty, emphasizes the importance of dissecting out every shred of the capsule of a joint. He says that unless this is done the patient will not have a full and free use of the joint. Why? Because the infection invariably lodges in the capsular tissues first, and therefore the pathology is to be looked for there.

Murphy in his work on arthroplasty is emphatic in stating repeatedly that no regard need be paid to the capsular or ligamentous tissues of the joint, and that when ankylosis has occurred the identity of these tissues is lost, because they have become replaced by cicatricial fibrous tissue, the result of inflammation around the joint.

To achieve the desired result from treatment, I think it is well to regard all of these cases of acute metastatic arthritis as of a surgical nature. It cannot be gainsaid that the surgeon has done more to work out the proper treatment of these cases than any other specialist. His treatment has been followed by better results because he does not believe in "the letting alone policy." There is every indication for doing something, and that something should be done at the proper time,—now! It should be done not only for the purpose of relieving the patient of his pain and distress, but to ensure, if it is at all possible, a useful joint after the termination of the pathologic process. In other words, it is essential not only to cure the patient for the time being, but to forestall the occurrence of deformity,

either with or without ankylosis. Furthermore, the original focus of infection should be sought for and removed, if possible, as can usually be done, and the patient's resistance fortified by the use of autogenous vaccines, manufactured from the causative organisms grown on ordinary or special media, preferably sensitized or auto-sensitized.

It is not my purpose to enter on a discussion of vaccine therapy at this time, but I am convinced by clinical observation of the great usefulness of this form of therapy, and further that it is not sufficiently well understood, therefore is not followed by better results in the hands of many of its users. A diseased appendix can be removed. A diseased gall-bladder can be drained. Intestinal disturbances may be overcome by medical or surgical intervention, and Lane has pointed out repeatedly that in his experience many cases of joint disease have been entirely relieved of all trouble by removal of a portion of the intestine.

A thorough removal of the tonsils removes what may be regarded as probably the most frequent source of joint metastasis, and one might continue and enumerate other sources from among a long list, but suffice it to say that the source of infection must be removed if it is possible to do so by drainage or otherwise, and that vaccine therapy should constitute an important element of the plan of treatment, so far as the general treatment of the case is concerned.

Now, as to the local treatment of the joint. What are the indications for local treatment?

The indications for treatment are: (1) To relieve the patient of pain; (2) to prevent the destruction of tissue; (3) to prevent the occurrence of deformities and

ankyloses, thus preserving the function of the joint.

To meet these indications many lines of treatment have been followed by clinicians, with varying results. Unfortunately, the results have not always been such as were desired, either by the clinician or the patient, but my experience has been that much can be accomplished if it is done at the right time and in the right way. One should never lose any time waiting, and if one has the pathology of the condition clearly outlined in his mind, it is a very simple matter to follow the indications for treatment. The treatment is not complicated; it is not difficult to carry out; it is not trying to the patient, and the results are eminently satisfactory to all concerned.

The pain is always caused either by intra-articular pressure, the result of the fluid in the joint, or by the forcing together of the articular surfaces of the bones, because of the involuntary contraction of the muscles and tendons around the joint, which invariably accompanies an inflammatory process. It is a reaction met with everywhere in the body, and points definitely toward one line of treatment. If it is this muscular contraction which is forcing the articular surfaces of the bones together and causing the patient such excruciating pain, which he tries to relieve by placing his limb in the most comfortable position, one in which this pressure is taken off these bone ends, then what should the treatment be? Keep the articular surfaces of the bones separated. That at once relieves the intra-articular contraction pressure. It also prevents deformities and loss of tissue. This indication is met by applying an ordinary Buck's extension to the limb below the joint involved, and putting on enough weight to overcome the muscular contraction. The

Buck's extension is a rather trying proposition when it must be left on for any considerable length of time. The skin becomes very tender and is apt to blister. A number of devices have been resorted to to do away with Buck's extension in these cases. I have tried canvas stockings and boots, and pneumatic rings. I have thought of using the nail extension method, employed for the treatment of fractures, but each and every one of these had to be discarded, because, after all, the best extension is the ordinary adhesive plaster extension. If the skin is cleansed thoroughly and the hairs are all shaved off and the plaster is applied smoothly on either side of the limb, and then cross-wise, in figure-of-eight form, but not completely encircling the limb, it will sustain a very heavy weight. A well applied roller bandage will further support the plaster and keep it from slipping. The method is very simple and very effective. The extension can be left on for months without being changed, and, if need be, it can be changed as often as is necessary or as is desired. The weight must be heavy enough to overcome the contraction of the muscles. That is a point to be emphasized particularly, because I have often seen a five pound weight on the leg of a man weighing two hundred and forty pounds, and yet it was expected that that weight would overcome the contraction of the muscles of such a man!

I also wish to point out that the limb or part affected must be placed in a position which is not only comfortable to the patient, but which will also meet the indication of preventing destruction of tissue.

Immediately that the proper weight is placed on the extension, the patient is relieved of the pain, provided intra-articular tension is not great, and that brings us to

the second point to be considered in the relief of pain in these conditions. A great deal of the pain in the joint from which these patients suffer is caused by the increased intra-articular tension which is produced by the collection of fluid or pus in the joint cavity. Joint capsules, as pointed out in a previous section in this paper, are very firm and tense structures. They permit of but very little absorption of any fluid which may be present in the joint cavity. Therefore, much valuable time is lost by waiting for the removal of any fluid from the joint cavity by absorption. Small quantities of fluid do no damage and cause no pain, or very little, because they do not materially increase the intra-articular tension. Therefore, little heed need be paid to them, and one may wait for them to disappear from the joint by passing through the capsular walls. But where the quantity of fluid is large, it must be removed, and that promptly. This removal should be effected only by aspiration, performed under the strictest aseptic precautions.

In general, the procedure may be outlined as follows: Disinfection of the skin with tincture of iodine; local or gas anesthesia; puncture the skin with a tenotome and introduce a needle—strong and short-beveled—into the joint. In all the joints, except the knee, the needle is entered directly into the joint in a direction transverse to the long axis of the limb. In the case of the knee the needle should be inserted about one inch to the outer side and one inch above the upper outer edge of the patella. It is made to tunnel the subcutaneous tissues and then passes under the patella until it enters the joint. This procedure is made necessary to prevent opening the joint too widely by inserting the needle straightway into it and thus increas-

ing the hazard of carrying an infection into the joint.

Traction should always be made distal to the joint, so as to separate its component articular surfaces as much as possible, because one should not under any circumstances injure the mesothelial lining of the synovial membrane of the joint. It is these mesothelial cells that form the protector of the joint, and once they are gone, either as the result of abrasion, injury or disease, the submesothelial tissues are laid open to infection. The infective products in the joint cavity are given an avenue of escape into the periarticular joint structures, and the destruction of tissue is hastened, or at least insured. The worst of all results following these joint infections then invariably becomes a sequel, namely, ankylosis. On the other hand, the entire joint may be destroyed by necrosis. Therefore, too much emphasis cannot be laid on exercising the greatest possible care in introducing a needle into a joint. The needle is introduced slowly, without unnecessary manipulation.

It should be of sufficiently large caliber to allow fairly thick fluids to be drawn up through it into the syringe. I prefer an ordinary blunt or short-beveled aspirating needle. By making negative pressure on the syringe piston it is possible to determine whether or not the needle has entered the joint cavity. If it has, fluid will be drawn up into the syringe. By removing the fluid in the manner described, the patient is given relief from pain, and there is less danger of tissue destruction, but this procedure by itself will not prevent the reformation of fluid. Two methods have been employed to prevent such a reformation, one, arthrotomy and drainage, and the other, injection of various solutions into the joint cavity. I am one of those who

frankly condemns opening and draining a joint in these cases of joint infection now under discussion. Unfortunately, it is a procedure still employed and advocated by some of the best surgeons, but the experiences of surgeons differ. I have never adopted this procedure but I have seen cases where such drainage was followed by ankylosis of the joint. In other words, the very condition one bends his best efforts to prevent is allowed to become a fact. Therefore, I would say that the treatment of these infectious arthritides by means of drainage of any kind is contraindicated.

This statement is strengthened by the results which may be obtained from joint injection. Various substances have been used for this purpose. A mixture of iodoform and glycerine, saline solutions, corrosive sublimate solutions, boric acid in varying strengths, tincture of iodine (a dram to the pint), Venice turpentine, and a two per cent. solution of liquor formaldehyde in glycerine. My experience has, in the main, been gained from the use of the latter solution. Its use was originated by Dr. J. B. Murphy. He has employed it in hundreds of cases with very gratifying results. The procedure commends itself as the proper one in the treatment of these cases to anyone who employs it according to the principles laid down by Dr. Murphy. It is based on sound pathologic principles, and its effectiveness is borne out by clinical experience.

The effect of this mixture in the joint is four-fold. First, it renders the fluid in the joint cavity a poor culture medium. Second, it induces increased polynuclear leucocytosis; these leucocytes yield a trypsin ferment which converts the albumins into peptones, thus rendering them more easily absorbable, and increasing phagocytic ac-

tion enormously. Third, the lymph spaces in the surrounding soft tissues are cofferdammed by the infiltration of these leucocytes, so that the infection necessarily must remain localized in the joint. Fourth, a constitutional or general leucocytosis is also produced.

The method of using this mixture has been described repeatedly by the originator of the method, and in detail by the author.¹ Therefore, it is unnecessary to consider this phase at this time. But I do wish to emphasize one point, namely, that this mixture should not be used *until it is at least twenty-four hours old*. Misstatements have appeared in print that it should not be used *after* it is twenty-four hours old. That is wrong. If the solution stands for twenty-four hours, it ensures a thorough mixture of the liquor formaldehyde and the glycerine.

Finally, the use of vaccines is to be recommended highly in these cases. I do not mean a stock vaccine, but an autovaccine, preferably a sensitized or auto-sensitized vaccine. Much discredit has been cast on vaccine therapy by those who have not thoroughly understood the method of its use, and particularly the reason for its use. Vaccines cannot be used unless one understands thoroughly what vaccines can and will accomplish. The autogenous vaccine is preferable to the stock vaccine, because it ensures that one has that strain as well as variety of bacterium which is causing the lesion in the individual case, and, second, the results mean something. The reaction from the vaccines must be understood. The right vaccine should be used at the right time, in sufficient quantity, and often enough to ensure the result which may be obtained

¹ *Surgery, Gynecology and Obstetrics*, Feb., 1915.

from its use. This is not the time to enter into a full discussion of vaccine therapy, but I do wish to emphasize the fact that vaccines are of enormous value in these cases, but only when they are used properly. Every effort should be made to find the original focus of infection, to get a culture and to make the autogenous vaccine, and in most cases this can be done if the clinician will persist in his search and be careful and thorough in his examination. Numberless cases could be reported illustrating the truth of these statements, but the literature is already flooded with reports of this kind, so that it will hardly be necessary to take up space now in the further citation of cases.

THE SURGICAL TREATMENT OF RHEUMATOID ARTHRITIS.

BY

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"The bony changes which were formerly supposed to be so frequent after rheumatism are now to be placed under a different heading; at least, this is true of most of them, since we have learned that what used to be called rheumatism of bone is rarely such, but is either of syphilitic or tuberculous, or, at any rate, of some other character. It is possible to have a rheumatic affection of the periosteum, but whether the true osseous structure can ever be regarded as subjected to actual rheumatism is exceedingly questionable and, in the writer's estimation, is not to be thought of. The term rheumatism should not be used as one under which to group all sorts of

conditions for which we have no other known excuse or etiology, and, so far as the bones are concerned, most of what used to be called rheumatism is something quite different. Nevertheless, it must be acknowledged that, in connection with the rheumatism involving the white fibrous structure of the periosteum, there may be thickening and subsequent ossification, which may produce more or less noticeable changes in the shape and perhaps even in the function of certain bones. The sooner, then, that the term "rheumatoid osteitis" is expunged, the better, because we do not know what rheumatism is, and the term is altogether too uncertain and unsatisfactory. Least of all should any truly inflammatory or suppurative lesion be connected with the expression rheumatic, since the two conditions are about as far apart as is possible. Inaccuracy of expression from lack of knowledge has in time past led to serious blending and confusion of the expression rheumatic with numerous lesions, most of which later turn out to be tuberculous, or bone abscesses of osteomyelitic origin and exceedingly slow course, and most of the conditions termed rheumatic are nothing of the kind. Let us therefore, if possible, in future entirely dispense with any connection of the two terms rheumatic or rheumatoid with bones and their diseases."

Thus the late Dr. Roswell Park¹ disposes of the question of the rheumatism of bones and, in our opinion, the same statement holds true for rheumatism of the joints.

Before discussing the surgery of these conditions, it is well to review somewhat their etiology. It is generally recognized that an attack of tonsillitis is frequently followed by an attack of articular rheuma-

¹*American Practice of Surgery*, Vol. iii, p. 339.

tism or rheumatic fever, while following an epidemic of la grippe we always find an increase in the number of patients complaining of rheumatic affections. It has also been reported as a complication of a large number of diseases, such as cerebro-spinal meningitis, dysentery, typhoid fever, erysipelas, mastoid disease, inflammations of the accessory sinuses of the nose, diphtheria, suppurative mastitis, appendicitis, empyema of the gall-bladder, mumps, gout, glanders, measles, scarlet fever, pertussis, puerperal fever, pyemia, septicemia, small-pox, typhus, and even sometimes of malaria. Of course, the relation of gonorrheal rheumatism to specific urethritis is familiar to every one, and most surgeons of large experience have noticed the frequency with which an attack of articular rheumatism supervenes upon the passage of a urethral sound or catheter. Massage of the prostate will also sometimes induce an attack.

On looking over this list, which is by no means complete, but which is sufficient for our purposes, one cannot but be impressed with the fact that in by far the greater number of these cases there was a suppurative focus, or at least an infectious element, taking on a more or less pyogenic character.

This, however, does not relieve us of the necessity of considering the so-called metabolic cause of the disease. When one stops to consider the condition of the intestinal tract, however, one is forced to ask himself the question; are these attacks for which we can find no obvious point of infection due to the uric acid diathesis or impaired metabolism, or are they due to a suppurative condition which we are not able to make out? The latter is the more likely condition in my opinion, when I consider that there are upwards of forty different types of streptococci present in the intestinal

canal, and when I consider the frequency with which I have encountered adhesions, enlarged glands, or even distinct areas of inflammation which had only been indefinitely suspected before a laparotomy was performed and the abdomen carefully explored. Adhesions about the gall-bladder, pylorus, and duodenum are so frequently met with that one cannot but wonder what relation these conditions may have upon the articular affections.

It has been pointed out by Fuller and is now corroborated by many other observers, that the seminal vesicles are often the seat of a chronic inflammatory process that seems to have a direct effect upon rheumatic affections generally, and there is no question but that he has succeeded in alleviating and curing a very considerable number of cases by his method of drainage. Arguing from analogy, then, may it not be equally true that a chronic salpingitis may be a cause of the disease in the female?

It has become fashionable lately to regard the mouth as the most frequent seat of infection, and the teeth and gums are being considered as the most frequent corpora delecta. This is probably a mistake, and the general surgeon called upon to treat a rheumatic involvement of any of the joints must religiously search out and eliminate every suppurative focus in the body before feeling that his work is complete.

Is Mr. Lane's theory that most of these diseases are due to difficulties in the large intestine true? If so, we must follow him in carrying out the suggestion of Metchnikoff that we can live comfortably and that we would be better off without this portion of our anatomy. Unfortunately, increasing experience does not bear out these contentions. The operations for the removal of the colon, or even for the short-circuiting

of the ileum into the sigmoid are attended with a very considerable mortality, and frequently bring in their train a series of symptoms quite as uncomfortable to bear and as inconvenient as the conditions they were intended to alleviate.

It is evident from what I have written so far that in my opinion rheumatism is invariably a symptom of a suppurative focus somewhere in the body and not a distinct disease by itself.

It may be asked then: how do you account for the improvement of cases of rheumatism by diet and by drugs? Probably the former deprives the intestinal cocci of the culture medium they require and so decreases the numbers of the colonies and consequently diminishes the elimination of their toxins; while in the case of the drugs it is more than probable that they act by decreasing the activity of the growth of the germ.

Believing these facts as I do, it becomes then the duty of the surgeon to immediately make an exhaustive search to determine the point or points of possible infection.

X-rays of the alveolar processes should be made and laboratory examinations of any discharge from the gums should be carried out. If amebae are present, emetine hydrochloride should be administered hypodermically, daily, in from one-quarter to one-half grain doses for at least a month or six weeks, while the teeth should be cleaned, roots removed, periostitis of the alveolar processes scraped and packed, crowns or bridges which are causing irritation should invariably be thrown out. If any of these irritations of the teeth or gums are discovered, the mouth should be watched from time to time to make certain that no further recurrence, either of the pyogenic process or of the ameba takes place. Ul-

ceration from ill-fitting plates should always be healed and the irritation removed. The tonsils should be carefully investigated. It is not enough to simply inspect the tonsil as it lies back of the pillar; it should be seized, drawn forward, and inspected carefully to see that it is free from calcareous masses and not liable to frequently recurring inflammatory troubles. If there is a history of recurrent attacks of quinsy, tonsillectomy should be performed.

The nose and all the accessory sinuses should be carefully examined, and if inflammatory areas are discovered they should be treated systematically until cured. If mastoiditis is present, or if there is middle ear involvement, these conditions should be cleared up.

Any furunculosis or acne should be treated aggressively until a cure is obtained.

The genito-urinary tract should be the next region examined—the urethra, prostate, seminal vesicles, and kidneys in the male, and the urethra, vagina, uterus and tubes in the female, as well as the bladder and the kidneys.

Any other foci of infection that can be seen on the body should be treated.

Failing in localizing any points of suppurative infection, the attention of the examiner should be directed to the gastro-intestinal tract. A careful history of any digestive disturbances, especially ulcerations of the stomach and duodenum, involvement of the gall-bladder or appendix, frequent attacks of diarrhea or dysentery, recurrent abdominal pains, or so-called attacks of peritonitis, should be investigated.

The condition of the blood, and of the urine and feces, the presence or absence in the latter of unusual intestinal flora or of amebae should be noted. The history of calculi in the kidneys or gall-bladder should

be sought for. This may involve a careful X-ray examination of the whole abdomen and careful stomach analysis.

Finally, it is important to consider the question of the possibility of tuberculous disease, in the lungs or elsewhere. Osteomyelitis must be considered, and a careful examination by means of the X-ray of the involved area may be essential to a complete diagnosis.

It is now essential to consider the different lesions that we find in the arthritides of so-called "rheumatic diseases."

Any joint or joints may be affected. It may be monarticular or polyarticular. It may cause simple discomfort, or progressive enlargement, deformity, and crippling.

Rheumatic synovitis differs from any other inflammation of the synovial membranes only in being a symptom of a constitutional condition and in the frequency with which we find involvement of other regions of the body, especially the endocardium. It is not always accompanied by effusion, although this frequently occurs. During the acute stage, the affected joint should be kept at rest, and the precautions already outlined should be carried out. If the effusion becomes very great, it is well to aspirate the joint under the strictest aseptic precautions. This effusion does not often become purulent, but if it does the joint should be immediately incised on both sides. It is not wise to insert drainage tubes if the drainage can be maintained by simply leaving the incisions open. Any foreign body inserted in a joint favors the formation of adhesions which it is important to avoid. It is advisable to apply a posterior splint, preferably a moulded plaster splint which is made on the affected limb, so that it fits accurately; and this can be made to exert even pressure simply by the application of

bandages. An ice-bag should be applied over the bandage on the portion of the joint not covered by the splint.

As soon as the acute symptoms are controlled, massage and careful motion should be commenced. At no time should the motion be continued beyond the point of pain, but it should be carried out carefully every day.

If aspiration or incision are done, the fluid should be examined bacteriologically. It is true that in many of these joints it has not been possible to obtain results from these examinations, but every once in a while the returns are positive. If a growth is obtained, it is wise to have a vaccine prepared and given hypodermatically. The amount of the vaccine administered must be determined by the conditions of each case, but it is best to begin with not more than fifty million and increase the dose each day until results are obtained. There is, at the present time, apparently a swinging-back of the pendulum in regard to vaccine therapy, but autogenous vaccines have been beneficial in a sufficient number of cases to make the treatment worth trying in every case where a culture can be obtained. The patient should not be encouraged, however, to expect too much, either in the relief of the pain or the amelioration of symptoms. It is better to promise too little than too much. In every instance the vaccine should be autogenous. I have had little benefit from stock vaccines in any of these cases, unless the infecting medium is the gonococcus, when I have seen marked improvement follow the administration of the stock vaccine while I was waiting for the preparation of the autogenous strain.

I still believe in the efficacy of the salicylate of soda in these cases, especially where the heart is affected. My results have been

better with this drug when combined with plenty of sodium bicarbonate than with any of the other preparations on the market. It is essential to consider the tendency of the salicylates to cause gastric disturbances; and the cerebral symptoms,—headache and ringing in the ears,—are often annoying. In order to be efficacious, the dosage of the drug must be large, and I have found by personal experience that the best way of administering it is to give from one hundred to two hundred grains within a short period of time. For instance, I am in the habit of ordering from four to eight doses of twenty-five grains each to be taken daily at fifteen minute intervals, beginning, say, at twelve o'clock noon. If four doses are ordered, that is, one hundred grains, they would be taken at twelve, twelve fifteen, twelve thirty, twelve forty-five, and one o'clock; while eight doses would continue to be taken in the same way until two o'clock. With each dose, the patient is instructed to take a half teaspoonful of bicarbonate of soda in a full tumbler of milk. If the headache and ringing in the ears become severe by evening, they are controlled by thirty grains of sodium bromide taken at bedtime.

This method is continued each day in the same way until the acute symptoms subside. Administration of the drug in this way rarely causes any of the stomach symptoms which result from the administration of the drug three or four times a day, and the appetite is not affected so much.

If ankylosis results, it may be wise to restore the function of the joint. This should not be undertaken until all signs of acute inflammation have disappeared; then the patient should be put under an anesthetic and the adhesions broken up carefully. If, in spite of this, ankylosis persists, it may be

necessary to perform a Murphy's arthroplasty.

Villous arthritis seems to be a condition midway between synovitis and arthritis deformans. By some writers it is claimed as an early stage of the latter disease, while others give it a description by itself. As a matter of fact, it seems to occupy a middle place. It may be a result of a chronic synovitis or it may be an earlier symptom of arthritis deformans. Indeed, all of these conditions are so related that it is probable that any one may be but a precursor of the other. It may occur in any of the joints, may be monarticular or polyarticular, and may be accompanied by the complications referred to in synovitis. The villi become hypertrophied, edematous, and sometimes have pedunculated attachments to the edges of the membrane. Sometimes cartilaginous plaques occur, or even bony plates. When they are very abundant and long, they may get between the bones in the joint and be pressed upon so that they cause pain and give the same symptoms as a foreign body in the joint (*gelenkmaus*). At times they become actually separated from their attachments and do become foreign bodies, (floating cartilages). In these joints, there is always more or less creaking. This may be so marked that it can even be heard. It can almost always be felt by putting the hand over the joint while it is moved in different directions.

Accompanying this condition, there is often an increase of the fat about the joint and a fatty degeneration of the villi themselves, *lipoma arborescens*. In the earlier stages of this condition, the treatment consists of diet, bathing,—especially mud-baths as they are given in the German Spas,—and general medical care. When the symptoms become so marked that they in-

terfere with the motion, or usefulness of the joint, the case should be referred to the surgeon.

In the surgical treatment, the joint should be laid well open and the hypertrophied fringes cut away. Care should be exercised to handle the inner surface of the joint as little as possible so as not to favor the formation of post-operative adhesions.

In the case of the knee-joint, the curvilinear incision should be made below the patella, with its convexity downward, the skin flap dissected up, and the patella cut through. This gives a good approach and practically complete control over the joint. *Lipoma arborescens* must be carefully dissected away. After the operative treatment, the affected joints must be carefully handled. Passive motion and massage should be instituted as soon as the condition of the limb will allow. The patient should be encouraged to move the limb as much as possible, so long as the motion does not cause pain or increase the joint effusion.

As a general rule, patients with rheumatism should be encouraged to take as much exercise as their condition will permit. A rheumatic is always stiffer in the morning after a night's rest in bed, and cannot sit still for any length of time without feeling the stiffness increased when he gets up. A good deal of judgment in handling these joints and determining the amount of exercise is required on the part of both the patient and the surgeon.

Arthritis deformans: This is probably only a more advanced stage of the chronic inflammatory condition. The absorption of the cartilage, the formation of *ecchondroses* and *exostoses*, the deformity and the general crippling that results, are most distressing, and unfortunately can be but little

benefited after they have developed. It is important rather to treat every case of rheumatism as a possible case of arthritis deformans, in the hope that by keeping the joints free from trauma as far as possible, and by eliminating every point of chronic infection about the body, we may be able to prevent the development of this distressing condition.

Surgically, all that we can expect to do is to overcome deformity, resect the *exostoses* or *ecchondroses* when they interfere with motion and are accessible without endangering the integrity of the joint, and by the use of orthopedic appliances when there is a tendency to disabling deformity, prevent its development.

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CEREBRAL RHEUMATISM.

BY

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Definition.—The term "cerebral rheumatism" includes all those phenomena which result from injury to the brain and its membranes by the *streptococcus rheumaticus* or its toxins.

Etiology.—(a) *Predisposing.* Age is an important factor. By far the commonest form of cerebral rheumatism is Sydenham's chorea, a disorder which, nine times out of ten, attacks patients between the ages of five and fifteen. Adults seldom fall victims to the cerebral forms of rheumatism, except in special circumstances about to be alluded to. *Sex*, again, is important. Quite two-thirds of the children with chorea are girls, and the chorea of pregnancy forms a large fraction of the adult manifestations. *Hered-*

ity plays a two-fold part, that of the rheumatic predisposition of certain families, and the neuropathic factor which is also inherited. *Nervous stress* is a prominent excitant in the chorea of childhood. Overwork at school and sudden fright are casual factors which the parents, at any rate, regard as important, and in many cases they are probably right. *Pregnancy* plays some obscure part in predisposing adult women to chorea, and it seems that *alcoholism* has some influence in inflicting hyperpyrexia on the adult male with acute rheumatism. Finally, it must not be forgotten that *poverty*, *scarlet fever*, and *seasonal* influences predispose a child to chorea as they do to the other phenomena of rheumatic infection.

(b) The *exciting* cause is infection by the *streptococcus rheumaticus*, or intoxication by its products. The evidence in favor of this statement is too complex to be arrayed here in detail. It falls under the following headings: (1) proofs of past or present rheumatic infection in a majority of cases of chorea in childhood and in pregnancy, and, of course, in all cases of rheumatic hyperpyrexia. (2) Parallelism between the fundamental predisposing factors and clinical features of chorea and other rheumatic phenomena (carditis and arthritis in particular). (3) Discovery of the streptococcus in the cerebrospinal fluid and meninges in cases of chorea and of rheumatic hyperpyrexia. (4) Experimental production of cerebral phenomena by inoculation of animals with the streptococcus.

Pathology.—To the naked eye the brain that has been attacked by this infection presents little that is remarkable. Microscopically, the meninges show traces of mild inflammation of the rheumatic type, i. e., proliferation of the capillary endothe-

lia, formation of new capillaries, and perivascular infiltration with cells of the "endothelial leucocyte" type. This is true of fatal cases of chorea as well as of rheumatic hyperpyrexia. In both types of case, again, destructive changes are found in the cells of the cerebral cortex. In the cases examined by myself these were distributed uniformly and not confined to the motor cortex. The basal ganglia are also damaged, but less severely; the pontine cells and those of the medulla less severely again, and the spinal cells not at all, (in my own cases). Cerebellar changes have been described, though in my cases they were not apparent.

Symptoms.—*Mental* changes are often discoverable in the subjects of rheumatic infection. Delirium is rare, but it does occur in alcoholics with rheumatic fever, with or without hyperpyrexia, and in children with severe carditis or with grave degrees of acute chorea. I have seen at least two cases of persisting insanity develop in connection with acute rheumatic infection, and it may follow chorea. Overdosage with salicylates may produce visual and auditory hallucinations. In nearly all cases of Sydenham's chorea the patient loses control of the emotions, laughing and crying too readily, and cerebration is also delayed. Even when there is no active chorea the rheumatic child is prone to peevishness, night terrors, and other of the lesser psychoses.

Thanks to salicylates and hydrotherapy, hyperpyrexia is rapidly becoming a clinical curiosity in acute rheumatism. Though I have notes of over a thousand cases of rheumatic infection, I have never seen a fatal hyperpyrexial attack. Of 200 cases severe enough to be admitted to the wards of the Bristol General Hospital, the temperature passed 104° in two only. Men are more

subject to it than women, and children not at all. Its usual accompaniments are severe carditis and arthritis. It is always coincident with grave cerebral symptoms, and ends, if fatal, in coma.

The *cranial nerves* are but little affected. Optic neuritis has been reported. Langmead has described hippus and other phenomena in choreic children, in whom corneal and pharyngeal insensibility may also be noted.

Among the *motor* symptoms choreic movements are, of course, pre-eminent. These seem to depend on a combination of defect of inhibition with some measure of cortical irritation. They may vary in intensity from the "latent chorea" of Miller-movements elicited in rheumatic children by stress, or noted by close observation—to the intense maniacal chorea which kills by exhaustion. Second in importance comes the weakness which often assumes the form of a hemiparesis at the outset or even throughout the course of a case of chorea. In some severe cases of chorea, again, hypertonus may be present in the form of slight head retraction.

Sensory changes of a mild degree are found by careful examination both in chorea and in the severer types of cerebral rheumatism. The distribution varies; in some hemianesthesia is found, in others a stocking area of anesthesia, and so forth.

The *reflexes* show but little disturbance. The knee-jerks of choreics are often exaggerated and "hung up," i. e., the limb tends to linger for a moment in the position of extension to which the knee-jerk has raised it. In chorea, again, I found a plantar extensive response in a few cases.

The *sphincters* are rarely affected. Sometimes, in comatose cases, there is true incontinence. More often, in severe chorea, the violent movements drive the bowel con-

tents past the sphincter. Miller claims that the familiar association between rheumatism and nocturnal enuresis is to be explained on the ground that the former is the direct cause of the latter by its damaging effect on the central nervous system.

Diagnosis.—In acute rheumatic hyperpyrexia the cerebral symptoms may be so intense as to overshadow the cardiac and articular phenomena, but as a general rule these latter symptoms have been in evidence prior to the development of any brain disorder; so that the diagnosis is seldom in doubt.

Chorea is seldom overlooked except in the paretic cases alluded to above. In such, if the child be told to extend hands and arms in front of her she nearly always hyperextends the fingers, and also twitches them if a question be given her to answer (e. g., "What lessons do you like best at school?")

Habit spasm is distinguished from true chorea by its chronicity, its limitation to one group of muscles, and the constant repetition of only one set of motions. The rheumatic nature of the case may, I believe, be always accepted as a fact in any case of chorea, even when no other rheumatic manifestation, past or present, has been observed; but to those who do not feel able to go as far as this I would suggest that they should at least accept the coincidence of carditis or subcutaneous nodes with chorea as evidence of rheumatic infection as valuable as arthritis itself.

Prognosis.—(1) As to *fatality*. Death in rheumatic cases is rarely due to cerebral lesions. Even the severest hyperpyrexial cases may recover if assiduously treated. The wildest chorea is not necessarily fatal, and in those few cases that end in death it is as much due to accompanying cardiac

signs as to the muscular exhaustion induced by the chorea.

(2) As to *freedom from sequelae*. Relapsing chorea in children spells permanent heart disease as a consequence in a majority of cases. Even if this be avoided, it seems that the brain of the child is not quite so good for a long time after an attack of chorea.

Treatment.—The prevention of rheumatic infection is outside the scope of this paper, but the writer feels strongly that in this direction preventive medicine has a great triumph to win.

The treatment of *hyperpyrexia* is rather preventive than curative. Administration of full doses of sodium salicylate, with rest in bed and tepid sponging if the patient's temperature rises above 103° or 103.5° , will prevent this dangerous complication in a vast majority of cases of rheumatic infection if practised as an invariable routine. When these measures do, however, fail to keep the temperature within bounds, cold baths or ice packing will usually effect the desired end. Collapse must be guarded against meanwhile.

In severe *chorea* salicylates should be given in full doses (sodium salicylate 10-20 grains with an equal quantity of sodium bicarbonate, every two, three or four hours; aspirin 10-15 grains every few hours), if it is possible to give medicine by the mouth. If not, sodium salicylate, well diluted, may be given per rectum. Apart from this the great indication is to prevent exhaustion by steady feeding, a difficult matter, the efficacy of which depends largely on the patience and resourcefulness of the nurse in charge. Sleep and quiet must also be secured so far as is possible. My favorite sedative is chloretone, 4-8 grains every four hours.

Trional, 10 or 20 grains, may also be useful. If these fail, and even before they are tried, a hot pack may be given with very marked benefit in checking the movements and inducing sleep.

But of all types of cerebral rheumatism that which we are most often called upon to treat is the mild relapsing case of chorea, the despair of practitioner and patient alike. The plan which I regard as most rational and slightly more successful than any other, is based on the conception of chorea as due to injury of neurones by a specific poison, which though finite in dosage may be repeated. The indications are therefore (a) prevention of further poisoning, by the use of the most nearly specific remedies available, i. e., salicylates, (b) restoration of the damaged neurones by securing adequate rest for the patient, and suitable restorative measures, such as change of air, tonics, massage, and graduated exercises. The salicylate phase of the treatment should be accompanied, at any rate at first, by rest in bed, and both measures should be maintained if possible until the chorea has ceased to get worse. After this point is reached, the gradual abandonment of bed and salicylates is guided entirely by observation of the patient's progress. The patient should be well fed throughout, and mental rest must be regarded as an absolute necessity both during and for as long as possible after the attack.

Various other drugs have their advocates, e. g., arsenic, antipyrin, and so on. It is very doubtful whether any one of these has the smallest influence on the course of the disease, and as unpleasant toxic effects may follow their administration they should not be used.

THE MENACE OF ACUTE RHEUMATISM IN CHILDREN AND ITS TREATMENT.

BY

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No medical term is more ambiguous than the word "rheumatism." Total confusion exists among the laity as to its exact clinical manifestations. For rheumatism to many comprises many conditions not at all rheumatic, and there is great clinical diversification between the adult form and that seen commonly in children.

J. Wiesel says: "Acute rheumatism is the expression of an infection in tissues that are congenitally of minor value and, as a result, prepared for disease. The special constitution of the patient conditions the peculiar localization and the clinical picture of acute articular rheumatism." The term rheumatism is often in children applied to different pains at different sites,—in joints, muscles, fibrous tissues in nerves of the body—pains with or following scarlet fever, gonorrhea, septicemia, or from the invasion of streptococcus, diplococcus, pneumococcus, or even the tubercular bacillus.

Two etiological viewpoints at the present time stand out prominently; (1) the bacteriologic; (2) the clinical; with perhaps a (3rd) a combination of the two. The former presupposes the disease due to specific micro-organisms, the latter that the body is acted upon peculiarly and in many ways by a wide variety of organisms, possibly finding their sites in the upper air passages, as the tonsils, nasal sinuses, brachial lymph nodes, in the ear, in the eustachian tube or elsewhere. Any lessening of the body resistance, common in childhood, releases these micro-organisms

to find individual sites. No positive proof exists, as Dunn says, that the micrococcus rheumaticus alone produces the condition which we call rheumatism because these manifestations are produced through animal inoculations. The tendency of rheumatism in childhood to recur as a chorea minor, arthritis or polyarthritis would seem to point to previous digestive or other disturbances, mild or severe and possibly overlooked. Dunn points out the special peculiarities of rheumatic fever in childhood.

1. The comparative mildness of articular manifestations.
2. The frequency of cardiac conditions.
3. The large number of cases in which there are only cardiac manifestations.
4. The frequent occurrence of endo- and pericarditis as primary conditions.
5. The marked tendency of current attacks, resulting in myocarditis and loss of compensation.

In a certain number of cases the disease presents a typical picture, perhaps in most cases,—at other times, care must be observed to grasp the clinical symptoms in exacting relationship.

In childhood the infection chooses the endocardium, pericardium and the synovial membranes as favored sites.

From about the eighth year on, or earlier perhaps, rheumatism resembles that of the adult. It also differs in clinical manifestations as we pass from earlier to later childhood—from childhood to adolescence, and again to adult life. In childhood it is an acute disease with resulting inflammation of the heart, joints, or both, severe symptoms being referable to the heart. As compared to the adult type arthritis, or polyarthritis is mild. In the adult the disease usually begins as an arthritis or polyarthritis and fever, pain, redness, swelling and the joint symptoms tending to severity. The fever, in early childhood usually ranges

from 97° to 106° F., the mean average being about 101°-103° F. higher with cardiac than with arthritic symptoms, higher with pericarditis than with endocarditis. Fever may persist from one day to several weeks—sweating along with fever is of rare occurrence in the very young. During the period from twelve months to about five or six years, the diagnosis at times presents great difficulty and may be confused with scurvy, anterior poliomyelitis, spinal caries, congenital syphilis, gonorrheal or meningococcal arthritis, congenital heart disease, la grippe, or perhaps pneumococcal osteomyelitis. The possibility of rheumatism existing under fifteen months is doubted by many, and in most of the heralded cases it is found to be scurvy.

In passing it might be well to enumerate some of the clinical signs in rheumatism in childhood possibly putting us most keenly on our guard in recognizing them. For instance, growing pains (muscular rheumatism), wandering pains, referred to almost any site, gastric pains referred to the region of the heart or ensiform cartilage, pleuritic pain, pain due to rachitis, tonsillitis, pharyngitis; chorea, tics, nosebleed persisting at regular intervals, night terrors, often a slight indisposition not noticed by the mother may be an initial sign, pain in the joints may be of mild or severe nature referred to the ankles, knees, wrists, elbows, small bones of foot and the shoulder joint. The attack in young children may last under one to over four weeks depending upon the mild or severe intoxication; in older children the attack lasts much longer.

Tendinous nodules on the fingers and toes, oval semitransparent, fibrous bodies, are seen often in England, but seldom in

the United States. They are often situated back of the elbow, over the malleoli, at the margin of the patella, on the anterior tendons of the hands, fingers and toes, and over the spinous processes of the vertebrae, or the scapulae. These small bodies are composed of fibrin cells and fibrous tissue, and are pinhead to small bean in size. They come and disappear in crops.

Erythema multiforme so often observed is usually limited to a few spots on the arms and legs, and contrary to general belief may not be of rheumatic causation, but that condition may light it up.

Erythema nodosum is seen frequently, purpura rheumatica less commonly. Co-existing phenomena are the pharyngeal, acutely inflamed tonsils, acute pharyngitis, or an angry red scarlatinal blush extending not as in the mild cases to the fauces alone, but rather extending to the soft palate and roof of the mouth. High fever usually accompanies this symptom—102° to 104° F. The pharynx is painful, pain also being referred to the neck and back of head. In older children suffering from repeated attacks of acute rheumatism is seen at times a severe form of rheumatic infection which Caiger calls "scarlatinal rheumatism," akin pathologically to ordinary rheumatism although differing in certain respects.

The pharyngeal mucous membrane, the soft palate and the buccal mucous membrane often are covered with an intense, fiery red erythema, and petechiae are seen pointing through this area. A strawberry tongue may accompany this phenomenon. The fever may be high, 102° to 105° F.; an arthritis is often co-existing. The course seems to be shorter and tends to recovery in less time than ordinary rheumatic fever and is seemingly less liable to affect the heart and pericardium. The joints may

however suppurate. As in rheumatism this form is amenable to salicylates.

Heredity may play a certain role in the causation of rheumatic fever, such children being less resistant to the poisons disseminated, parents transmitting in fact the poisons of gout and rheumatism. Damp climate, poor hygienic surroundings, damp cellars, crowded rooms among the poor, badly prepared food, which latter I believe to be a strong predisposing factor, as well as the rich and highly seasoned dishes of the well-to-do. Any condition which tends to undermine the body resistance may influence the disease.

The most prominent symptom associated with rheumatism of the very young is, in my opinion, chorea. This is seen in two forms (1) mild or (2) moderately severe. In many of the mild cases the heart is not involved and with proper remedies the child is brought back to proper health. In the moderately severe cases the heart may not be involved but usually is. Often a faint systolic murmur or "hemic" blowing may give us sufficient warning. Chorea may attend, precede or follow other clinical symptoms. Its signs are seen in unexpected and unlooked for places. A sharp word or command may develop a latent sign: the elevating of the skin on the forehead, persistent winking of the eye, elevation of the nose, listless or awkward lope, undue nervousness, or hysterical outbursts. A mild chorea may without treatment result in the moderately severe form. A case of mine, a child 5 years of age became for a time a bed-ridden, helpless invalid under such circumstances. Possibly chorea may be the result of the action of toxins upon the nervous system, and is it not plausible to suppose that from faulty food, unhealthy living conditions in general—in fact, mild or se-

vere gastro-intestinal fermentations, as seen in highly concentrated irritating urine, frequent micturition, rough, dry skin, furred tongue, anemias and the like might formulate these poisons? Clinically to some of us new signs are constantly appearing.

The second major symptom, endocarditis, also accompanies, precedes or follows chorea or the joint and pharyngeal conditions—usually some form of chorea precedes it. It may be primary however. Endocarditis is found in (1) mild, (2) moderately severe, and (3) very severe forms. In the very young the first two divisions are usual. In its mild form it ranges from a simple dilatation, recognized by an acute ear or by the stethoscope as a soft blowing systolic murmur, often misdiagnosed hemic. Exacting diagnostic methods should be used to verify these murmurs and to note the changes in them. For as dilatation extends, and dilatation is the first pathologic condition, these systolic murmurs change, and other murmurs such as the aortic may creep in. Unless one is sensitive to auscultation and percussion, tracings had better be made daily showing accurately the increase or diminution of the dilatation. With convalescence it is easy to define the decreasing heart area and the gradual cessation of the systolic murmurs in the mild cases. So-called hemic murmurs co-existing with signs of rheumatism, I believe to be organic and not functional; in fact, most if not all functional murmurs in children seem to me visionary. Poynton and Paine state that in first attacks of rheumatism and often in first attacks of chorea there is a definite increase in the cardiac area appearing and disappearing, an accentuation of the pulmonic second to the left, a soft systolic murmur or blowing is heard at time internal to the nipple; again there may be an

irregularity of both ventricles. The toxin or toxins exert a subtle poison upon the heart's valves and upon the cardiac muscle causing the heart to give way before even normal blood-pressure. The heart may be more affected from a mild attack of rheumatic fever than from a severe one, when the kidneys begin to feel the strain. These soft blowing murmurs are heard in the fourth interspace or at the apex and are often modified by change in the position of the patient. As the cardiac condition grows worse the child becomes anemic. Mitral insufficiency follows dilatation—mitral stenosis or aortic insufficiency is rarer. The onset of acute endocarditis shows fever and dyspnea rare, pain rare, chorea frequent, and fever and sore throat common.

When pericarditis follows we have fever, precordial pain, dyspnea often severe, cough and usually joint pains. Pericarditis in children differs not at all from that of the adult.

The urine of acute rheumatism in children tends to the type of an active hyperemia and only after repeated rheumatic attacks when resistance is lowered, and usually in older children, when the implantation of pyogenic micro-organisms takes place, do we find the degenerative changes in the kidney structure. A concentrated urine dribbling over the genitals results in a persistently painful dermatitis. The quantity in 24 hours usually ranges around 1,500 c.c., but may fall as low as 300 or 400 c.c., color normal or high, reaction acid, specific gravity 1,018-1,030. Of normal solids, says Ogden, we may find urea, uric acid increased, chlorides and phosphates in moderation, sulphates normal or increased. Albumin ranges from the slightest possible trace to nearly 1 per cent. in older children. Moreover there are found renal casts, renal cells,

occasional blood globules free or adherent to casts. Often abundant amorphous urates. If pericarditis is present then the chlorides and phosphates are very much diminished or disappear altogether. We find at times normal blood, at other times abnormal blood. Few granular and brown granular casts may be present, occasionally blood, epithelial and fibrinous casts are seen, numerous renal epithelial cells brown in color and a few leucocytes are also observed. It is not to be understood that every case presents the same urine conditions; however, every case fulfils many of the conditions enumerated above. In later childhood and in the adolescent period definite changes in the parenchyma of the kidney, especially of the convoluted tubules may be seen. A cloudy swelling of the protoplasm of the renal cells takes place with fatty changes and some desquamation. This condition may affect a large number of convoluted tubules.

The old saying that "it takes a clever man to diagnose, for any fool can treat" is certainly far from true, for in rheumatic fever in childhood, exactness in treatment is only secondary to experience and cleverness in diagnosis. While the diagnoses may in many respects present a typical, clinical picture, not always to be sure, yet the treatment is rarely simple, often diversified and individual. Different methods in treatment form different standards. As each observer according to his microscopical or clinical viewpoint lays stress upon some individual micro-organism, some microscopical or chemical urine finding or some clinical feature or manifestation, it can readily be seen that no one vaccine or serum has as yet been devised which fits every case—any case in fact. There is difficulty in isolating the different micro-organisms causing rheumatic fever, for not alone does the

diplococcus rheumaticus cause it, but probably many other organisms also. The problem how to destroy these micro-organisms without injuring the delicate mechanism of the body is a difficult one. From a large series of drugs relied upon, often with good reason, for a drug is often all powerful and beneficial in experienced hands, can be chosen a rare few which act at times well, at other times poorly, or else not at all. To most of us the chemically pure salicylate of soda acts the best in small repeated doses. It should not be given over a long time or in excessively large doses. Small oft repeated doses do less harm and act better. Of the other drugs salol is often beneficial; for the remainder I have scant use. Therefore, the most important treatment in my hands is a clinical one.

The most important points along this line of treatment are—first, rest; second, relief of pain; third, properly selected, cooked and assimilated food; fourth, drugs; fifth, hydrotherapy; sixth, open air with gradual exercise; seventh, removal of abnormal conditions in the upper air passages; eighth, proper care of the teeth, mouth and pharynx; ninth, proper clothing.

Rest is probably the most important factor of all, governed and influenced by the severity of the joint symptoms, endocarditis, chorea, anemia, exhaustion, or the accompanying nervous manifestations. Rest usually means bed with light bedclothing, fresh air without draft in a warm even temperatured room, facing south, pleasing pictures and agreeable surroundings. All this, if possible. A dry warm climate, or a change from the usual to a higher or lower altitude is often very beneficial.

For the relief of pain the salicylates are efficient and it is rarely necessary to immobilize the joints. In selected cases

Dovers powders may be valuable.

Fever should give us no worry, as it is an indicator of the intensity of the poison and points a way to its successful combatment. Other means than by drugs wholly should be used to thwart it, such as bathing, fresh fruits, fresh vegetables, olive oil, rhubarb and soda mixture or cascara. Mouth and throat irrigations of alkaline mixtures, peroxide of hydrogen, and alkalol are beneficial. Sprays and swabbing are with these remedies also indicated in tonsillitis and pharyngitis.

Alkaline drugs such as the acetates and citrates of potassium, sodium or magnesium are oxidized in the body into carbonates, and therefore act as systemic antacids. They are neutral and therefore do not destroy the gastric digestion. According to Wood the potassium salts are great diuretics, and second to them only come the sodium salts. These salts favor also the oxidative processes in the body thereby lessening the amount of uric acid to be excreted; lemon juice is an example. Sodium and potassium carbonate should be omitted from the therapy for a portion will combine with the HCl of the gastric juice. The resulting chloride is not only incapable of neutralizing any systemic acidity says Wood, but is also much less diuretic.

To me one of the most important conditions in the treatment is the teaching of the parent or guardian of the proper selection and preparation of food. A general knowledge of the food elements should be understood, their digestibility and food value. Under this heading comes cereals, vegetables and fruits. Served in an appetizing manner they stimulate the digestive juices through the central nervous system. Fruits and their juices—raw and cooked, better raw contrary to popular supersti-

tion, act on rheumatism almost as a panacea. Strawberries, for instance, instead of having a deleterious effect upon rheumatism act quite the contrary. I quote from a previous article.

"As to fruit salts. The carbohydrate content of fruit is glucose, levulose and saccharose, although the latter exists in a very small amount and diminishes in proportion to the ripeness of the fruit. This levulose or fruit sugar represents starch in the stage of complete digestion and ready for instant absorption in the body. It is ideally and wonderfully suited to delicate stomachs, more so than is cane sugar. The fig, the banana, the apple, apricot and pineapple contain levulose for instance. It is a great aid in the digestion of foods. Also the acid fruits such as the lemon, lime, grape-fruit, oranges, cranberries, currants, and pineapples are very valuable for their acids and organic salts, existing mainly in combination with alkalies as the citrates, malates, or tartrates of potassium sodium, magnesium and calcium. The final stage in the digestion of fruit is the conversion of fruit acids and salts into alkaline salts chiefly carbonates.

"When the juices from the fruit are taken into the digestive canal, they are readily absorbed and carried with the absorbed food to the liver, where the acids and acid elements of the organic salts are oxidized releasing the potassium, the sodium, the magnesium, etc., which are changed to carbonates, these increasing the alkalinity of the blood. These alkalies are furthermore eliminated by the kidney, hence the diuretic action. The acid fruits are very diuretic."

Apple sauce, prune sauce, pear sauce, plum sauce and other juices, strained or

unstrained made from fresh ripe fruit, the juice of the orange, lemon, pineapple, pears, plums and the like can be given with impunity. Even the juices of berries raw and mashed, or in their natural state add similar virtues and food valuation. Certain vegetables cooked or in the form of soups are valuable. Among these may be mentioned the pea, lima bean, and spinach puree. They fulfil a certain nitrogenous need and leave in the intestines but little residue. Farina with cream and a small amount of sugar is a valuable addition. Much sugar, however, should be guarded against. This is not true of levulose or fruit sugar.

Toast, stale bread, milk in moderation are useful, relieved by rice, sago or tapioca pudding.

Hypertrophied tonsils should be removed when indicated, and as soon as possible when the child's condition warrants it.

Hydrotherapy is a most valued remedial agent. In the early part of the disease warm morning baths 60° to 80° F., followed during the day at regular intervals with cooler sponge baths exert a stimulating effect upon the skin, upon the nervous system and through the latter upon the heart. Light superficial massage should be given after the bath except where inflammation is present, followed as pain decreases by deeper massage. Needle sprays, electrical tub baths and baths with rock salt can be given as convalescence progresses in older children.

During the acute articular stage, where movement is painful, where swelling and pain may be intense, Bier's hyperemia followed by the application of a 500 candle-power electric lamp has seemed to work well, a passive followed by an active hyperemia.

A long convalescence should be insisted upon when iron, olive oil, maltine and tonics can be given as indicated.

The sanitary condition of the home should be inquired into—plumbing, drains, cess-pools, closets, etc., should be in good condition.

The child should be kept from school for a long time after it has regained its health, the nervous excitement, mental strain and competition may throw the patient back to a renewed attack interfering with its digestive apparatus.

As rheumatism is an internal disease and should be treated internally in a "back to nature" manner, unnecessarily warm, uncomfortable clothing or underwear are distinctly contraindicated.

Education along the line of prevention would minimize the horrors of the menace of rheumatism in children.

NEWER REMEDIES IN THE TREATMENT OF RHEUMATISM.

BY

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It is not our intention or province to discuss at length the treatment of rheumatism, but rather to call attention to some of the later remedial agents, including drugs, chemicals, and other measures.

Probably more theories regarding the etiology of rheumatism have engaged the attention of medical men than that of any other disease excepting possibly that of cancer, and as treatment of any diseased condition is based upon its etiology, and the less we know of the causation the greater the number of remedies are recom-

mended in its treatment, it follows that hundreds of agents have been advised for rheumatism from the empirical cures of the household and the quack of former times down to the somewhat restricted lists of more modern times which are based upon scientific research and clinical study. And yet no later than 1906 Shoemaker in the sixth edition of his work on *Materia Medica and Therapeutics*, names 120 agents, 50 for the acute form, 50 for the chronic, 7 for gonorrheal rheumatism and 18 for muscular rheumatism. H. A. Hare in his *Text Book of Practical Therapeutics*, fourteenth edition, 1912, recommends 42 agents for the acute, 15 for the chronic, 1 for the gonorrheal and 12 for the muscular form, 70 in all.

It will appear obvious from the above that with all our research, improved diagnostic skill and clinical observations, we have yet to find a cure. There are so many variations and complications; it is so clearly allied to other complaints and the etiology so obscure, almost every variety and form calling for different treatment, that it is doubtful whether a specific will ever be found; certainly not until the cause can be more clearly defined.

The nature of the changes which come about as a result of the effects of the poison has not as yet been fully determined. We have the question of heredity, age, recurrence, vagaries as to location, heart complications, the fact that it may terminate in suppuration and that local measures to relieve simple inflammation are effective in some cases, while in others constitutional treatment is required. Is it any wonder we are confused by the different theories as to the cause of rheumatism? One school declares it to result from lactic acid in the blood, others advocate the uric acid theory,

the neurotic or the miasmatic; all of which theories necessarily complicate the treatment.

These preliminary remarks are not intended to forestall the discussions which will appear in the able articles to be found elsewhere in this issue of AMERICAN MEDICINE; rather to emphasize the many difficulties in determining a form of successful treatment.

Aspirin is said to be insoluble in the acid secretions of the stomach, neither is salicylic as such liberated in the small intestine according to Hoelscher of Chicago who had an opportunity to determine through observation of a case of jejunal fistula. An examination of the jejunal contents after its administration failed to disclose the presence of the end products of aspirin. It would appear therefore that the drug is mainly absorbed in its original form, or without disintegration through action of the intestinal secretions. This leads to the belief that the beneficial effects of aspirin in rheumatism do not depend as was formerly thought, alone upon the absorption of salicylic acid. Graham Chambers believes that the drug is absorbed as acetyl salicylate, its original form, or without liberating salicylic acid as such. This theory is contrary to the commonly accepted one but as the use of aspirin is without many of the unpleasant by-effects of the acid itself or of sodium salicylate, it may be in a measure true. It will not be wise, however, to expect absolute freedom from gastric disturbances when administering aspirin. When there is a functional disturbance of the stomach, aspirin may cause irritation; then its diaphoretic action, while desirable in some instances, may be objectionable in others.

Aspirin is recommended in acute, chronic

and muscular rheumatism as well as that form of neuralgia described as of rheumatic origin.

While aspirin is chemically a monoacetic acid ester of salicylic acid, novaspirin is the methylene-citryl-salicylic acid, a compound of anhydro-methylene-citric acid and salicylic acid; containing, it is said, 62 per cent. of salicylic acid.

The advantage claimed for novaspirin over the older aspirin is that the later product is less likely to cause gastric irritation. Its absorption is also more gradual and thus its excretion more prolonged. There is said to be absence of tinnitus, headache and cardiac depression; nor is there renal irritation according to experiments made and reported in *Folia Urologica*, No. 7, 1908. The action of novaspirin is like that of other agents of the salicylic acid group in the less severe types of acute articular rheumatism in subacute, muscular and chronic forms of the disease. According to Liebman, *Wiener Klin. Wochenschrift*, No. 7, 1907, it causes a rapid subsidence of swelling with relief of pain and reduction of fever, while the absence of decided diaphoretic effect is of advantage. He found it safe when there was organic cardiac disease, in pregnant women and children.

Atophan, is chemically phenyl-chinolin-carboxylic acid and is recommended in all forms of rheumatism on the theory that it stimulates uric acid excretion having an elective and prompt action as a mobilizer rather than as a uric acid solvent.

Oeller and numerous other clinicians have reported highly gratifying results with atophan, more particularly in gout. Oeller considers that it has a specific action and that in polyarthritis it reduces the high temperature and causes a disappearance of objective and improvement of subjective

symptoms. There was no untoward cardiac, constipating or pronounced diaphoretic action. It is, according to Klemperer and Weintraud, antifebrile and analgesic.

Novatophan is the p-methyl-phenyl-cinchonic acid, or methyl-phenyl-quinolin-carboxylic acid.

The indications for use and dose of atophan and novatophan are identical.

Drs. Charles G. Stockton and S. Solis Cohen in discussing a paper by Arthur F. Chase read before the Section on Practice of Medicine of the American Medical Association at Atlantic City, reported in the *J. A. M. A.*, September 12, 1914, agreed in their experiences with atophan. Dr. Stockton declared that he had noted unpleasant effects in some instances although usually it caused no trouble. Dr. Cohen declared that the most striking effect, clinically, of atophan in gout, rheumatoid arthritis and acute articular rheumatism is the relief of pain. In rheumatic fever the administration of atophan was always accompanied by relief of pain and fall of temperature, but that its withdrawal was followed by a recrudescence of pain and fever. It did not bring about recovery. For this, resort to the salicylates was necessary.

Diplosal is the salicylic ester of salicylic acid, one molecule of diplosal being formed by two molecules of salicylic acid after abstraction of water. It is indicated whenever salicylic acid or its derivatives can be used to advantage; is said not to interfere with the function of digestion; does not cause profuse perspiration in medicinal doses. It is not claimed that diplosal will replace salicylic acid and its derivatives, but that it can be given over longer periods of time. If there should be symptoms of disturbed motility it should be discontinued. There have been some cases of tinnitus re-

ported in nervous patients.

Melubrin is the sodium salt of phenyldimethyl-pyrazolon amidomethane-sulphonic acid. It is closely related chemically to antipyrine. It is reported by Loening, *Munchener Med. Wochenschrift*, No. 9, 1912, as indicated in acute articular rheumatism in which it has the same specific action as salicylic acid. No action on heart was observed, nor was there increase of pulse rate. It may be given where endocarditis exists; there was no profuse perspiration. Occasional relapses occurred in acute rheumatism, but these, according to the author, were not as frequent as when salicylate of sodium was used. Analgesia is notably manifest in acute, subacute and chronic rheumatism; in chronic polyarthrititis and in muscular rheumatism. Large doses seem to be essential for success in these cases; they can be given if desired by enema. Vomiting, rashes, and gastric trouble have been observed.

Treber is under the impression that articular swelling did not disappear as rapidly as when sodium salicylate was used.

In consulting the more recent works on treatment we find that for rheumatism in its various forms, recommendations are almost entirely confined to salicylic acid or the numerous salicylates. Differences exist among clinicians as to the salicylate to be used, the dose and the method of administration, whether to be orally, intravenously, intramuscularly, subcutaneously or locally applied. Some form of a salicylate or one containing salicylic acid is almost exclusively used. Constitutional treatment is necessary to clear out the intestinal tract, to promote elimination of toxic products through the kidneys, skin, etc. Diet forms a prominent feature of treatment, as does rest and warmth to the joints involved, but summed

up into a few words, the accepted treatment of all forms of rheumatism today is that of salicylic acid.

It is presumed that the reader will be familiar with the names of the various agents both for internal and local use so we will not unnecessarily extend the length of this paper by giving a list of them.

Vaccination and radium treatment will doubtless be discussed at length in this issue of AMERICAN MEDICINE by those most competent to discuss them and we will not therefore include them in this paper.

In conclusion we will state that that form of salicylic acid which causes the least disturbance to the digestive function will best serve in the treatment of rheumatism.

RHEUMATISM IN CHILDREN.

BY

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Etiology and Pathology.—Rheumatism, properly so-called, is a specific disease which like other specific diseases is almost certainly due to a living contagium. At the present time the causative organism has not been definitely recognized, though there is a considerable amount of evidence which tends to show that a coccus described by Poynton and Paine is the organism really responsible.

Arguing from the analogy of other disorders and from the clinical phenomena and anatomical findings of the complaint itself, it is probable that the contagium may either multiply in the blood stream or else settle and grow in certain defined spots. The symptoms and physical signs would be produced both by local inflammations at the sites of settlement and by the more

general effects of the toxins manufactured by the organism during its growth. The typical focal lesion of rheumatism is the rheumatic nodule, a small mass situated in the subcutaneous tissues, usually over bony prominences or in connection with tendons. The nodule consists of fibroplastic cells mostly of connective tissue origin, with an amorphous centre and tends after an existence of some weeks, up to three months, to disappear and to be replaced by new fibrous tissue. Focal lesions of similar formation are found in the endocardium, the myocardium and the pericardium but are almost invariably absent from the inflamed joints after death. Thus Garrod's suggestion seems a reasonable one that the joint symptoms are really due to the toxic action of the products of bacterial growth, as would also be the fever, the sweating and the skin eruptions. In this connection one may compare the frequent toxic results of the injection of alien serum into human beings as shown by fever, joint pains and erythematous rashes. It is remarkable that the salts of salicylic acid have usually a rapid curative action on some of these toxic symptoms (e. g. fever and joint pains) while it is more than doubtful whether they have any influence on the infective lesions such as nodules or the cardiac inflammation.

Other factors enter into the causation of rheumatism besides the entrance into the body of the victim of the causative organism. Thus there is a distinct hereditary predisposition to the disease in certain families and it occurs more frequently amongst those living in bad hygienic surroundings in damp localities. The direct influence of damp, such as getting wet or sleeping on damp ground or in a damp bed seems to be more often met with in adult patients than

among children. No doubt these circumstances act by lowering resistance to the invasion of the organism. It should be noted that there is no evidence of direct conveyance of infection from one patient to another.

Symptoms.—The manifestations of rheumatism in childhood differ from those in adult life and are much more varied. In a general way it may be said that in adults certain of the toxic symptoms are the more prominent while in the child the infective lesions become conspicuous. Still the infective lesions in the heart are sufficiently common in later life and occasionally adult cases are met with which are exactly of the childish type, whilst in children plenty of the symptoms appear to be toxic in origin.

Fever is usually less high in the child than in the adult, a striking difference from what is the rule in other infections. In most cases it is quickly reduced by the administration of salicylic acid, but more often than in later life the temperature may prove refractive to treatment. The continuance of fever is generally caused by some inflammatory process such as pericarditis, endocarditis or pleurisy but sometimes there is a long continued slight elevation of temperature when no definite evidence of any inflammatory condition can be found. Such cases may be proved to be rheumatic by the past history or by the development of a positive manifestation of the disease such as nodules. On the other hand many cases where nodules have lasted for months show no fever, yet in some of these it is probable that there has been a continued cardiac inflammation. Hyperpyrexia is almost unknown in children.

Joint pains are much less severe in childhood but most patients suffer from them at

some period of their illness. Occasionally they may be completely absent throughout a definite attack of rheumatism. The joints may be swollen and red as in adult life or may show no visible change. The pain does not stay as a rule in any one joint but passes away after a day or two and a fresh joint is attacked. In childhood the small joints are seldom attacked and of the larger ones the hip is more frequently affected before than after puberty. More commonly than in adults, though the occurrence is still rare, persistent pain in one or more joints with slight fever may be met with. In these cases there is permanent alteration of the joints and much wasting of the muscles that move them, and it is probable that the arthritis is infective, due to a local growth of the organism instead of the usual transitory toxic attack. Stiff neck in children is often rheumatic in origin.

Skin Affections.—Sweating, which is such a marked feature of the disease in older people is usually absent in children and is never profuse. On the other hand skin eruptions are much more common. These are always of the nature of erythema (usually erythema multiforme) and generally indicate a severe type of the disease. Sometimes hemorrhage takes place into the eruption, forming the purpura or peliosis rheumatica, but most cases of purpura have nothing to do with rheumatism. A rare eruption in rheumatism is erythema nodosum, when large red tender lumps appear on the limbs, chiefly below the knee, associated with moderate fever. The other skin rashes are not febrile. While sometimes the connection of an attack of erythema nodosum with rheumatism is quite clear, the great majority of cases of erythema nodosum are evidently due to some other cause.

Nodules are found in a considerable proportion of cases, (about a third), in childhood whilst they are comparatively rare in adult life, though less infrequent than is usually supposed. They form masses of varying size in the subcutaneous tissue and are neither painful nor tender. Their commonest sites are over the bony prominences of the elbows and knuckles and if not found in these situations they are very unlikely to be discovered elsewhere. In addition to their occurrence on the elbows and knuckles they may be found along the flexor tendons in front of the wrists the extensor tendons of the fingers and toes, over the patellae and bony prominences of the ankles, along the spines of the scapulae and the crests of the ilia, etc. They also occur over the skull, especially over the occipital bone. Being subcutaneous they are movable over the subjacent bone, though sometimes where the bone is near the surface as in case of the skull or patellae they may be attached to the bone. Rarely periosteal growths, rheumatic nodes, occur along the shafts of the long bones.

The discovery of nodules is important from more than one point of view. They are an absolutely definite sign of rheumatism, being found in no other condition. It is true that somewhat similar growths are occasionally noticed in chronic rheumatoid arthritis about the elbows, but they are usually larger and softer and are situated further down the shaft of the ulna. They are also persistent while the rheumatic nodule disappears after a few months though fresh ones may appear. Again nodules are clear evidence that while they are present there is a persistence of rheumatic infection with all its dangers to the heart. When nodules are present the heart

has nearly always been severely damaged and it may be taken as a general rule that the larger and more numerous the nodules the greater the damage suffered by the heart and so the more grave the ultimate prognosis for the patient.

Throat.—Inflammations of the fauces and pharynx are some of the most constant phenomena of rheumatism in early life and not infrequently there is a regular attack of follicular tonsillitis. The tonsils have been regarded as a lurking ground for the rheumatic organism and one must always bear in mind the possible rheumatic origin of any throat inflammation in childhood.

Serous Membranes.—Pleurisy may occur at any age but is more frequent the younger the patient. It may give rise to very little in the way of symptoms and is likely to be missed unless the patient is specially examined. There is generally a good deal of effusion which is absorbed very slowly. It may be accompanied by a localised pneumonia which may cause very indefinite symptoms, as a rule merely some increase of the dyspnea already present from the cardiac inflammation.

The peritoneum, especially about the appendix is said, by some authors, to be attacked not uncommonly but the evidence of the existence of a definite rheumatic peritonitis is at present incomplete.

The pericardium is considered below.

Heart.—The seriousness of an attack of rheumatism depends on the amount of damage that has been inflicted on the heart. It is true that adult patients sometimes die from hyperpyrexia but this is extremely rare in children. On the other hand the heart is more frequently and more severely affected in the child and death occasionally occurs from acute cardiac inflammation.

It may be taken as a rule that the younger the child the more likely is the heart to be attacked.

A general dilatation of the heart probably occurs in every case of rheumatism owing to the action of toxins on the cardiac muscle and sometimes this dilatation is considerable. In the absence of inflammation this usually disappears as the patient gets better from his attack. It is of interest to note that the organism which has been regarded by Poynton and Paine as the cause of rheumatism gives rise in its growth to the formation of formic acid and that formic acid causes a loss of tone in cardiac muscle and so leads to dilatation of the heart.

The heart may be regarded as the seat of selection for the focal growth of the rheumatic organism. From the vast importance of cardiac inflammation the subject requires to be considered in some detail. Any of the three layers into which the heart is ordinarily divided may be attacked, the pericardium, the myocardium or the endocardium and in each or all of these nodules may arise. In the endocardium the nodular lesions tend to be situated in the substance of the valve cusps. Over the inflamed nodules the epithelium becomes altered and in consequence some fibrin is deposited from the blood forming the vegetations which are the macroscopic sign of endocarditis. Since the tendency of the lesions of rheumatism is to gradually form fresh fibrous tissue, which as it grows older contracts, the cusps of the valves are puckered and deformed so that in time their proper function is interfered with. During the actual inflammatory stage, however, the lesions are too small to in any way prejudice the action of the valves and in consequence there is no physical sign which warns us of the presence of endocarditis. Probably

there is sometimes a raised temperature but it is also certain that there can be active endocarditis without any fever, and a quickened pulse may be caused by many other conditions. Of the various valves the mitral is most often affected but both the aortic and tricuspid may be attacked. Still if there is any valvulitis the mitral is always one of those that suffers.

Poynton and Paine consider that their rheumatic micrococcus may sometimes give rise to ulcerative endocarditis, but it is probable that this condition is always due to the infection of the damaged endocardium by other organisms of which a form of streptococcus is that most frequently met with.

The myocardial lesions may be both infective and toxic. The occurrence of dilatation of the chambers has already been pointed out but the rheumatic poison also injures the contractility of the muscle so that it acts feebly and has little reserve; in consequence the first sound becomes weak and often nearly disappears. Since the poisonous action of the toxin is more severe when it is manufactured in local lesions than when it is derived from far off sources through the blood, tonicity and contractility are likely to be both much injured in acute carditis and it is to the combined effect on these two properties on the cardiac muscle that death in acute inflammation is due. After the poison has ceased to act the muscle cells recover to a considerable extent, but some permanent damage is probably always inflicted and the subsequent phenomena of heart failure are as much, if not more, due to the myocardial impairment as to valvular defects.

The infective lesions in the myocardium are similar to those in the endocardium and are situated in the connective tissue between the muscle cells. According to Carey

Coombs they are not evenly scattered all over the heart but are most numerous in the left ventricle especially around the mitral orifice and near the origin of the aorta. The lesions are very small and unless very numerous could not produce much damage to the muscle; no doubt certain muscle fibres are permanently destroyed by the inflammation but these would be but a very small part of the total number of fibres.

Toxins would be manufactured in the bacterial foci and would obviously chiefly affect the muscle fibres in their immediate vicinity while the rest of the muscle of the heart would only be poisoned by such toxins as are absorbed into the general blood stream and brought to the heart by the coronary arteries. It follows, therefore, that in cases of rheumatic myocarditis the muscle cells near the mitral and aortic valves would tend to be more severely poisoned than the rest of the cardiac muscle. Around the mitral opening there are arranged a number of circularly disposed muscle fibres which act as a sphincter to the valve opening and if these fibres lose their tone the orifice will become widened so that the valve cusps may be unable to close it. Such a widening is frequently found after death in rheumatic hearts of more than sufficient extent to have allowed the blood to regurgitate from ventricle to auricle and the production of a systolic murmur best heard at the apex. An apical systolic bruit of the character of those of mitral regurgitation is one of the earliest of the signs of cardiac involvement in rheumatism and is usually regarded as an indication of endocarditis. As has been already pointed out the lesions of endocarditis are not of a nature to in any way interfere with the function of the valves and so could not give rise to any such murmur, but an incompetence

of the valve and its accompanying murmur would be expected to result from the lesions of myocarditis, so that the early systolic bruit of rheumatism is an indication of the existence of inflammation of the cardiac muscle and is the only clinical sign at present known of this, the most important complication of the disease. The aortic valve has no muscular sphincter and so would be unaffected by the adjacent myocardial inflammation.

A dilatation of the ventricle without a special loss of tone in the mitral sphincter would tend to leave the mitral orifice about its normal size, that is to say small compared with the increased size of ventricular cavity. This probably accounts for the other murmur sometimes heard early in rheumatism, a diastolic murmur at the apex, the bruit being due to the passage of blood through the comparatively narrow opening into the enlarged cavity of the ventricle.

Pericarditis seems also to be caused by local bacterial growth. The inflammation is accompanied by an exudation of fibrin and fluid and after the absorption of the latter adhesions between the visceral and parietal layers commonly form, which may ultimately hamper the heart considerably. Naturally where all three layers, pericardium, myocardium and endocardium are involved as so often happens in childhood the poisoning of the cardiac muscle is much more serious and we find children dying of acute carditis, a comparatively very rare phenomenon in adults. Serious general carditis usually, however, only occurs in a heart that has already been much damaged by several previous attacks of rheumatism. The physical signs of pericarditis are sufficiently obvious, first pericardial friction and later the signs of effusion. After some days the effusion is generally absorbed and never becomes

purulent in pure rheumatism. In very acute cases there may be some hemorrhage making the fluid bloodstained. Tapping of the pericardium is never necessary; no doubt the presence of fluid in the pericardial sac hampers the action of the heart to some extent but during an attack of rheumatism when death occurs from heart failure it is much more due to the poisoning of the muscle than to pericardial effusion and the removal of the fluid would do little to improve the chances of the patient.

Rheumatic pericarditis is, in itself, not a very serious lesion, but since it is probably always accompanied by considerable inflammation of the muscle and endocardium, its recognition is a cause for anxiety. It may afford also an extensive area for the manufacture of toxins, which would seriously affect the subjacent muscle and the additional strain imposed on the heart by pericardial inflammation and effusion may prove too much for the muscle, already damaged by inflammation and toxic poisoning, and hence lead to failure. The probability of subsequent adhesions and still more the fact that pericarditis usually implies severe inflammation of the other layers and its consequences renders the future prognosis grave.

Nervous Symptoms.—It is common to find that children with rheumatism are excessively excitable and emotional, laughing and crying without adequate cause. At the same time they are mentally dull although in their previous condition of health they may have been bright and intelligent. These cerebral symptoms are exactly like the mental symptoms that are observed in a large proportion of cases of chorea and the condition has been called "minor chorea." Between this condition and one in which marked involuntary movements

lead to a definite diagnosis of chorea there are all gradations and of course major chorea is a common concomitant or sequela of rheumatism. A careful examination of cases of chorea reveals the fact that over 50% have either had rheumatism previous to the chorea, or are suffering from rheumatism at the same time or get rheumatism subsequently provided one regards evidence of present or past cardiac inflammation as conclusive proof of rheumatic infection. Now-a-days chorea is regarded as one of the manifestations of rheumatism and by some is considered as a form of rheumatic infection of the brain. For instance Poynton and Gordon Holmes have described slight changes in the cerebral nerve cells, but in spite of this it seems more probable that its causation is toxic.

This is not the place for an elaborate description of chorea, but it may be pointed out that the affection is characterised not only by the irregular involuntary movements but also by the mental symptoms above described and by definite muscular weakness which in many cases is so great as to deserve the appellation of paralysis. The symptoms usually last a long time and do not readily respond to any known treatment.

The nervous symptoms do not necessarily develop in all cases of rheumatism and it seems as if there must be a decided lowered resistance on the part of the nervous system before the rheumatic poison can act on it. Chorea, both major and minor, is much more common in girls than in boys and one can frequently get a history of neurotic disorders in other members of the patient's family, such as insanity, epilepsy and chorea itself. The patients themselves have usually been nervous excitable children, who have often exhibited signs of nervous instability.

According to Still rheumatism itself is commoner amongst neurotic children than among ordinary ones; so that there is often a past history of night terrors, somnambulism, habit spasm, lenteric diarrhea, etc.

Course.—Rheumatism is uncommon in the earliest years of life and is very seldom met with before the age of four years. It does not become common until after six.

As seen in the child it is only exceptionally an acute disease; more commonly it is a long continued chronic process with occasional acuter accentuations. The symptoms are of great variety and are not usually exhibited all at the same time. At one period there may be slight joint pains, or even muscular pains (the growing pains of the nurses), at another period tonsillitis, then an eruption of nodules and lastly an attack of chorea. No definite order is maintained in the manifestations and chorea or tonsillitis may be the first sign. Certain slighter symptoms are not infrequent such as headache, epigastric pain or stiff neck. Any or all of these may be associated with cardiac inflammation, or the heart may become inflamed without other signs of rheumatism. In the adult the attacks are usually short and sharp and cardiac inflammation is almost confined to the periods of the acute attacks, but in the child rheumatism tends to be a process rather than an acute disorder and progressive inflammatory damage may be proceeding insidiously in the heart when there may be no other sign of rheumatism, or at most nodules. An individual attack may be short but commonly lasts months and a person who has once been attacked remains more susceptible to subsequent reinfection, but single attacks do occur and in them sometimes no permanent damage is done to the heart. In other cases a persistent valvular lesion may be left where

the muscle has been only slightly injured so that adequate compensation is possible and the patient in the absence of further rheumatism remains with a heart which is efficient for ordinary life. A really serious impairment of the heart as a working machine is usually a consequence of several attacks.

Rheumatism especially if there are several attacks may give rise to a good deal of anemia.

Diagnosis.—The recognition of rheumatic arthritis is usually easy in the child. Acute epiphysitis causes more pain and more fever and the pain is rather in the region of the epiphysis than in the joints; it is persistent and does not fly from one joint to another. Still the frequency of rheumatic affection of the hip in children has to be remembered as this must be distinguished from epiphysitis of the upper end of the femur and from tuberculosis of the hip. The typical nodules are a certain sign of rheumatism and should always be looked for. Inflammatory conditions of the throat and obscure febrile attacks afford more difficult problems; the possibility of their being rheumatic should be borne in mind and other signs of rheumatism searched for, especially any evidence of cardiac inflammation. Other forms of arthritis are considered later.

Rheumatism is far the commonest cause of carditis in the child and the recognition of cardiac inflammation may often prove a clinching point in the diagnosis. Still pericarditis may arise from pneumococcal infection in cases of pneumonia and empyema, and from staphylococcal in association with acute epiphysitis and osteomyelitis, in both of which connections the effusion is purulent. Pericarditis, too, is sometimes tubercular. Dilatation of the heart occurs in a

number of acute infections such as scarlet fever, typhoid and diphtheria and may sometimes be accompanied by a temporary systolic murmur audible at the apex. Inflammation of the endocardium is almost invariably rheumatic at this age, as the ulcerative type is very rare, but there is no definite means of recognizing endocarditis in the early stages.

It has already been pointed out that the early murmurs of rheumatism are not due to endocarditis but to implication of the myocardium and that the development of an apical systolic murmur is almost certain evidence of the existence of myocardial inflammation. Later, of course, murmurs arise from valvular deformity, due to past valvulitis, and in the presence of these murmurs a fresh attack of myocardial inflammation is not likely to yield any physical signs. During the course of an attack of rheumatism there is considerable probability that where there is myocarditis there is also endocarditis and this probability is much increased when signs of pericarditis are also discovered. Hence, while the diagnosis of endocarditis is a matter of inference, its presence can often be assumed with considerable confidence, but every case of rheumatism should be examined two or three months after an attack to see whether any valvular defect has developed.

The *prognosis* in children is much graver than in adults. Although death from hyperpyrexia is rare, there is the considerable danger from acute general carditis, which, however, seldom causes death in a first attack of rheumatism. The presence of nodules increases the gravity of the outlook, especially when they are numerous and large. Pericarditis in itself, even with considerable effusion, is not a specially serious complication, but since pericarditis is al-

most always associated with severe inflammation of the myo- and endocardium its presence much increases the gravity of the outlook both for the moment and with regard to the future, since much damage has probably been inflicted both on the muscle and on the valves.

Treatment.—There is no specific treatment for rheumatism, that is to say that no means are at present known either to destroy the organisms that have found a lodgement in the body or to completely counteract the toxins produced by them. Recently the intravenous injection of a 1 in 2,000 solution of perchloride of mercury has been advocated, but this method is still on its trial; the injection certainly does no harm. Possibly when the peccant organism has been definitely recognized an immune serum or a vaccine may be prepared of therapeutic value.

It is, however, possible to rapidly relieve some of the toxic discomforts by means of salicylic acid and its derivatives. In the writer's opinion the best preparation to use is the sodium salt which may be administered in moderate doses (e. g. gr. x to a child of 7 years every four hours until relief is obtained). The symptoms thus amenable to treatment are fever and the joint pains but the drug seems to have no action on the infective lesions such as nodules or cardiac inflammation. The nervous phenomena are said to be benefited by acetyl-salicylic acid in doses of gr. xv four times a day and to the writer this seems to be true. Some cases, however, are certainly not improved and it is always difficult to accurately estimate the action of drugs in a complaint characterised by such rapid changes as chorea.

Some authors, notably Lees, consider the salicylates as being a specific against rheumatism and give it in large doses. The

writer's experience does not coincide with this view and he therefore considers large doses unnecessary since relief of symptoms can be obtained with smaller ones. Salicylic acid in large doses acts as a poison, reducing the alkalinity of the blood and the first sign of "acidosis" is air hunger which may be followed by coma and death. These dangerous effects may be avoided by giving sufficient alkali with the drug to keep the urine alkaline. Sodium bicarbonate in double the dose of the salicylate is usually sufficient for this purpose. It is important also to see that the bowels are acting regularly before the dose is increased.

There is a considerable body of evidence to show that the continued administration of the salicylates prevents the occurrence of relapses. In adults it is probable that the inflammatory conditions of the heart chiefly arise during the acute manifestations of rheumatism and it is possible that in children they are more prone to start during exacerbations; hence it is advisable to continue the drug in half doses for a week or two after the more severe symptoms have subsided.

During any acute symptoms the child would naturally be kept in bed but in a case of rheumatism it is advisable to insist on the patient being kept quiet for long after the subsidence of fever and pain. The first essential in the treatment of an inflamed organ is to give it rest as far as possible. When a person is in the recumbent posture the heart has much less work to do than when he is up and active. Where there has been any sign of cardiac inflammation the child should, therefore, be kept immobile on the back for a prolonged period (at least two months) and even in the absence of any abnormal cardiac signs a complete rest for six weeks should be insisted on, since

the heart does not often escape in children and endocarditis gives no definite sign of its presence. It is certain that recovery from cardiac inflammation may be complete and the patient may be left with a very successful organ even if he has a permanent valvular defect; thus it is worth while expending a considerable period in bed on the chance of a more or less complete recovery. Beyond rest no means of combating cardiac inflammation is known; blistering over the precordium has been advocated but it is very doubtful whether this influences the subjacent inflammation.

The diet in rheumatism should be as light as possible and a return to solid food should not be made too early; a relapse not infrequently follows the permission to partake of meat.

While the treatment of a rheumatic attack cannot be regarded as completely satisfactory, a good deal can be done in the way of prevention. Poor children living in bad hygienic surroundings suffer disproportionately compared with the well to do. Hence a child with a family history of rheumatism, or one who has already had an attack, should live in an airy healthy house in a dry locality, should have woollen garments next the skin and care should be taken to prevent his getting wet; if wet his garments should be changed as soon as possible. These children should not be pressed at school from their liability to chorea especially if they themselves show signs of nervousness. They require careful watching; sore throats and vague pains in the limbs or neck should entail a careful examination from the medical attendant to see whether the heart is sound and whether nodules are present. As the child gets older the liability to a recurrence becomes

less and less and so in the absence of attacks the outlook becomes more favorable.

INFECTIVE ARTHRITIS.

Children are liable to various forms of infective arthritis and some of the organisms concerned are pyogenic so that the arthritis may be purulent. Generally the primary infection is distant but there may, of course, be extension from adjacent disease (e. g. extension from an epiphysitis into the joint). The cases may be distinguished from rheumatism by their more severe constitutional symptoms and the greater local pain which persists in the joints first attacked. There will be an excess of polymorphonuclear cells in the blood. The pus must be let out and the joint drained. The commonest organisms are staphylococci, streptococci and pneumococci which affect the joints in children more frequently than in adults. A pneumococcal arthritis usually follows pneumonia or empyema, but may occur without other foci of infection. Several joints are generally affected and the effusion is nearly always purulent. There is a good deal of pain and tenderness and the skin over the swollen joint has a peculiar pallor.

The gonococcus may also give rise to arthritis in the child and usually several of the larger joints are attacked. In infants the initial lesion may be a gonorrheal conjunctivitis while in older children the sexual organs may have been affected. The arthritis remains in a single joint for several weeks and thus differs from rheumatism. The diagnosis depends largely on the discovery of some primary gonorrheal infection. The cases in children generally do well when the primary lesion is efficiently treated; suppuration in any of the affected joints is very rare as is also gonorrheal en-

docarditis. Where the joints do not clear up with rest and the thorough treatment of the ophthalmia or vaginitis, a vaccine, best prepared from the patient's own organism may be employed.

Joint disease due to tuberculosis and syphilis have to be distinguished from the other forms but do not come within the scope of this article. Syphilis causes a symmetrical painless enlargement with considerable effusion usually of the knees. It is generally accompanied by marked pegged teeth and keratitis and the Wassermann reaction is usually positive.

Affections of the joints of nervous origin, similar to the Charcot joints of locomotor ataxia, may develop in acute anterior polyomyelitis but the association will usually make the diagnosis easy. The hemorrhagic effusions into the joints in hemophilia have also to be remembered.

RHEUMATOID ARTHRITIS.

There are two more classes of chronic joint trouble whose etiology is at present unknown, which are probably both infective. In the one, osteo-arthritis, there is early change in the bones and marked development of osteophytes. This form is almost unknown in childhood. In the other, the lesions are mainly periarticular and decided alterations of bone or cartilage are only a late development. This form, to which the name rheumatoid arthritis is now usually confined, is not very uncommon amongst children, sometimes starting as early as the third year of life. Many joints are attacked usually symmetrically, the commonest being the knees, ankles, wrists and the joints of the hands and fingers as well as the upper part of the spine. The maxillary and sternoclavicular articulations, which are so frequently affected in adults, are less

often attacked in childhood. The periarticular tissues are much swollen and there is a good deal of thickening of the synovial membrane but very little effusion into the joints. The resulting swelling gives a fusiform appearance to the joint. Beyond some rarefaction the bones are not attacked but later on in the disease there is some destruction of the cartilage making it appear pitted.

At the onset there is usually moderate fever and some sweating and the disease in its course is not steadily progressive but there are alternate exacerbations of the joint conditions with elevation of temperature and quiescent periods. In both adults and children there may be enlargement of the lymphatic glands and spleen, but this is commoner in children. The combination of joint swelling and increased size of the spleen and glands was first described in children by Still and the syndrome has been called "Still's disease," but it is probably not a separate complaint. The glandular enlargement becomes greater during the exacerbations of the disease to subside in the intervals. Pain and tenderness in the joints are not severe, but the muscles waste rapidly and the general nutrition is much impaired and the development of the child is sometimes delayed.

In the treatment good food and healthy surroundings are of first importance. Everything must be done to improve the nutrition of the child, hence tonic drugs, arsenic and cod liver oil are useful. The joints require to be wrapped in wool and may be painted with mild counter-irritants such as tincture of iodine. Radiant heat is often of considerable benefit. Any septic condition elsewhere such as an unhealthy mouth should be thoroughly cleaned up. Drugs seem very uncertain in their action sometimes benefiting one patient and not an-

other and a large number of prescriptions have been found to be useful in small groups of cases. Carbonate of guaiacol, iodide of potassium and arsenic have proved the most generally useful.

Though in a considerable number of cases the disease progresses steadily into adult life and cripples the patient yet the outlook is by no means hopeless. The disease may come to a stop and there may be even a complete recovery, though of course the longer the continuance of the symptoms the less the probability of recovery.

THE TREATMENT OF ACUTE RHEUMATISM.

BY

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It is very hard to make people really understand what we mean by acute rheumatism. Though there are many cases of rheumatic fever with well-defined and localized survivals of the microbe that causes a large part of the disease, it cannot be said that medical studies have worthily accounted for *another* part, which is also acute rheumatism, though its description has suffered from the strict writers to whom only the febrile side has appealed. In this paper, the term "rheumatism" is applied to rheumatic fever and to acute swelling of the joints, with pain and inflammation.

To rationalize in matters of rheumatism is hardly possible; since its bacteriology is so inadequately established that we must suspend our assent. The investigation of the microbe of rheumatism is becoming a monumental work, far outreaching our original ideas. There can be no doubt that in

this line Poynton and Paine are doing us a service of inestimable value, which will be a great aid to students of bacteriology, who will find all the researches described as one organic whole. Innumerable experiments dealing with particular germs have, of course, appeared. But that one work, like the "Researches on Rheumatism" uniting the whole is not superfluous is shown by the frequency with which it has been quoted by writers of modern pathology and therapeutics. Dealing with these problems of the cause of rheumatism, the latest writers express the opinion that more proof might with advantage have been brought to the solution of such difficulties—to what might be termed the microbic as distinguished from the adventitious causes of rheumatism. Possibly the authors are right in devoting the greater part of their researches to the discovery of a single cause and its phenomena, the organism which they have called *diplococcus rheumaticus*, because to the general reader this must be more interesting than the drier consideration of familiar extraneous causes. Still this part of the subject deserves all the attention that has hitherto been devoted to it, for in the discovery of a microbic cause all the salient points of therapeutics will necessarily be touched upon.

It would argue a want of proportion to accept the *diplococcus rheumaticus* as the invariable antecedent of rheumatism. It is true that this organism is spread very widely in the nodules and other lesions and that a natural link connects it everywhere with the class of micrococci which become evident in the body when infection and supuration have invaded and altered it. But it seems to me that this *diplococcus* at most must be one of a group of *diplococci* that have appeared and reappeared in bacteri-

ology. The bacillus, which Achalme described in 1891, was countenanced by Thiroloix; it has been found in rheumatism by Bettencourt, Carriere, Sawtschenko, Pic and Lesieur. It is a very large bacillus, like the *bacillus perfringens*, and some writers consider them the same. (Garrieu, *Montpellier med.*, 1914, p. 409). It may be regarded as quite distinct from the small bacillus lately described by Danielopolu (*Centralbl. f. Bakt.*, 1914, 73, Orig., p. 354). He found this microbe in the synovial fluid; it is small, extra-cellular, staining according to Giemsa. The microbe thus detected is not unlike that of Poynton and Paine.

The virus of rheumatism, presumably a living agent of excessive minuteness, though nothing more is known of it, remains active for a long time. It yields to a few remedies, and, if these are properly administered, it makes a poor performance in the face of them. Uric acid is also an important element in the causation of acute rheumatism. Of course, uric acid is a totally different and unconnected poison. Yet it occurs in excessive amount in acute rheumatism, though it is very rare to find such proportions as exist in uremia and in Bright's disease. Frank and Pietrulla give interesting examples of diminishing or even wholly eliminating it by means of salicylates. (*Archiv. f. exper. Path. u. Pharmacol.*, 1914, Bd. 77, p. 360). How effective the salicylates are may be realized by studying the reduction of uric acid after their use. The value of these agencies—apart from some unknown action—rests almost wholly upon the production of their presence in the blood; for thereby hangs all that distinguishes an efficacious remedy. Their intrusion into the blood and joints is incompatible with the virus, and induces a healthy change.

In radium we have two powerful agencies working to produce this change—and it is at least pardonable to wonder whether the fruit of modern endeavor and achievement with radium will not be the cure of rheumatism. These energies are the radium element itself and its emanation, of which the high hope is entertained that it shall shine forth an imperially splendid remedy—a universal light upon a background of disease. The emanation has for the most part been genially underestimated by those whom it baffles. Their attitude to this substance is that of schoolboys to books that they despoil, which they barely look at and for whose comprehension they run no risk of brain fag. To the understanding of radium emanation must be given the seriousness and height of aim that go to make great improvements; trifling with it in the cheap, modern reprint of Chicago lectures or setting it in the advertised halo of some spotless surgeon and F. A. C. S. is the ineffectual standard in such things. There is indeed something in the changes wrought by science in our daily life, and in the rapidity of those changes, which perplexes masters of routine in spheres of mutual admiration of self-advertisement. But there are fortunately other spheres, quite apart, from those of the medical Barnums of the surgical arena, where the changes wrought by physics and mathematics of radium may well astonish. These things are not easy to understand, and hence, there is something winning and pathetic in the anxiety of the mediocrist and kindergarten empiric, moving in a paradise of association meetings, to learn whether he is really getting to understand and commune with the mysteries of true science and is really adding to his overburdened brain a commission

to explore those mysteries.

What should be the first essential, the absolute requisite, the “Without-Which-Nothing” in a physician who uses radium emanation in the system under which science administers it at the present time? To such a question—a very useful and practical question when we are engaged in employing an agent like radium, and when we are faced with most difficult problems in physics and chemistry—a single answer will probably be given. Study is the first essential, and with study, the necessary skill in testing the emanation with the electroscope. Without this knowledge, we may be incredibly misled; our results may be extinguished, for, unless we test the emanation as we proceed, we shall have no certain means of tracing its power. In the case of this method, so much neglected by second hand students, we are able by mathematical calculations to determine the limits of its action.

For example, if we give emanation water in a case of rheumatism, if the patient drinks it daily, the gas diffuses through the body, through the tissues that we wish to affect. We shall find it in the urine in a few hours, or in the blood and synovial fluid. Though a heavy gas, it is extinguished rapidly in the tissues; it must be administered in constant quantities. If, for instance, we have a patient drink water containing 5,000 Mache units daily, we shall find varying quantities of emanation in the parts of the body which are peculiarly the seats of rheumatism. I found in the urine of a patient the following values 2 hours after he had drunk water containing 2,500 Mache units. The electrometer showed:

Correction	9, 8
after 5 minutes	9, 8
55 c.c. of urine were tested after 5 minutes,	
reading:	
10—8 115"	10 = 345 volt"
10—8 200"	8 = 331 volt"
	14" in 320"
10—8 = 285"	x in 3600"
10—8 = 355"	157, 5 volt per l.
640	
Average 320"	
Or	
157, 5 volts x 4, 86 (capacity)	
765, 45 : 1080	x
3000 x 3600 : 1000 = 0, 708 M. U.	
	Per Litre
in 2500 c.c. system 0, 708	
in 1750 c.c. system x 3, 54 M. U. in 50 c.c.	
	x in 1000 c.c.
70, 8 M. U. in litre.	
plus 25% radio-activity.	
88, 5 in 40	
Intensity curve x in 60 = 146, 50-	
73 Mache units in 50 c.c. of the urine.	

The thin filament or string moved across the scale of the electrometer at the rate mentioned above, from which we deduce the calculation of the amount of emanation in the urine. This result in Mache units conveys to those who know anything of radium emanation a wealth of unused power. The patient in the case was aware of the effect, for it diminished exudate and increased the excretion of urine, but, chiefly, the effect was patent in the decline of pain and swelling. Of course, to obtain such figures it is necessary to employ a method and apparatus that produces a daily charge of emanation. The only apparatus, which accomplishes this object is the apparatus of Saubermann, of which there is a description in Lazarus' *Handbuch der Radium*, in Finzi's little book, and in Newcomet's excellent manual. The emanation from this apparatus has a very high exponential. (See Rutherford, *Radio-active Substances*, Appendix). On this subject, I shall publish

more fully in future.

One of the many delusions about rheumatism is that the salicylates have suffered eclipse. This delusion is especially current in the aimless marginal jottings of students in the classrooms of pharmacology. In an article in the *Journal A. M. A.*, a writer concludes that salicylic acid must occur in the blood as a salicylate, and that sodium bicarbonate, as proposed by Lees, is superfluous. This negroid science has, of late, become very popular. The secret of its success is quite a simple one. We feel as if we were being addressed by an able lecturer with whom it would be a pleasure to compare notes. We feel that we are not dealing with an actor on the medical stage but with a critic, whose mission it is to present a difficult problem and a commentary to explain it. It follows that such a critic is never intolerably tedious; but he is never intolerably learned. His article may be read in three minutes, and forgotten in two, but the time is not entirely wasted. He is not without brains, but he grievously misapplies them.

The truth is that very fine results can be achieved by an intelligent practitioner who keeps his patients exceptionally under the influence of salicylates in the course of rheumatism. Though it is the custom of copy-book experts to sneer at these remedies, the man who is unable to use them with effect is as painfully crude an artist as he who cannot escape from one convention. The salicylates must be given in large doses; most patients can stand 120 grains a day of sodium salicylate. As a consequence of these doses we discover whether we are dealing with genuine rheumatism. Secondly, we must not expect to cure every symptom even of acute rheumatism. If we attempt to do too much, the result, as may

be imagined, is at times a startling incongruity between the case and the events that accompany it. When the salicylates fail, it is in these circumstances, or when ingenious collaborators are annotating a separate page of disease under the delusion that it is the same.

Few physicians have time to try all the new forms of salicylic acid; fewer to disentangle their various sources and reactions, and as hygiene grows more effectual fewer still will be inclined to do so. Some of these compounds are excellent. Among the best are acetyl-salicylic acid, atophan, melubrin, and diplosal. But in the use of the salicylates of the aromatic series there are many interesting and illuminating things. If we run through this series we get a notion of what constitutes their efficacy. Those that we may accept as the most sound are—sodium salicylate, salicylic acid, benzoate of sodium, phthalic acid and cotarnine phthalate, salicin, saligenin, methyl salicylate, cinnamate of sodium, the natural salicylic acid and other natural salicylates.

The derivation of salicylic acid is interesting. There are three hydroxy-benzoic acids formed by introducing OH into benzoic acid. They are nearly the same but differ by the position of the OH and COOH groups in the benzol ring. The ortho acid is salicylic acid.



It has not been used for injection on account of its insolubility, but its sodium salt has been injected into the veins by Mendel with some apparent success. The great difficulty is to employ it in doses large enough to saturate the system.

Salicin.—Salicin dissolves easily in warm

water, but, as far as I am aware, has not been employed for injection. It is hydrolysed into the body into its two components, sugar and saligenin, a phenol alcohol existing in nature.

Methyl Salicylate.—Methyl salicylate is a useful form for injection. According to Stockman¹ this salt, when dissolved in 3 parts of olive oil, is "seldom irritating" when applied to the skin. It might be of value for subcutaneous injection.

Salol.—Salol is a remedy which has been supposed to possess a much greater importance than really belongs to it. Why this unreal value has been ascribed to it I have not been able to discover. If it is given in doses large enough, there is the danger of phenol poisoning, and small doses have slight effects on rheumatism. It is given subcutaneously in² oil:

Salol.10

Oil of Almonds (sweet)30

Of this 5 c.c. are administered three times a day.

Salol is also administered in iodipin:

Salol 25

Iodipin100

Warm and dissolve.

Dose.—5 c.c. are injected at a dose.³

Iodipin and salol are best given hypodermically, and near the site of pain. They appear to act directly to some extent. It is well to massage the skin over these injections, it facilitates absorption, for an oil as thick as iodipin has a tendency to stagnate at the point where it is introduced. These are remedies par excellence for the painful swelling and nodules. Similarly, cotarnine has the effects specifically intended.

¹ Stockman, *British Med. Journal*, 1913, p. 597. (A valuable paper).

² Maurange, *Formulaire pratique de l'hypodermie*.

³ *Pharm. Zentralhalle*, 1911, p. 1303.

So too, methyl salicylate and mesotan, which, if carefully applied, are not likely to produce inflammation of the skin. Injections of sodium cinnamate are of value. They are painful; but the pain may be lessened by adding chloretone to the solution, which, in the case of sodium cinnamate, should be saturated or about 5%.

Sodium bicarbonate in large doses should always be given when the salicylates are administered. It has an effect quite apart from the effect on the reaction of the urine. It is somewhat strange that a writer in the *Journal A. M. A.* condemns so well established a practice. For evidence of its value, the work of Ker on the infectious diseases may be consulted with profit.

The Natural Salicylates.—Nothing conspicuously novel or hair-raising has been written on this subject of late. Instinctively the ordinary physician identifies the natural salicylates with patent medicines, the didactic note, and a contracted mental outlook. Herein he shows his want of touch with the scientific world. It is truly said by men who are expert in chemistry and pharmacy that the natural salicylic acid gives the better results. (*American Journal of Pharm.*, 1908, p. 407). Stokvis, who, with Charteris and Maclellan, have published the only scientific physiological researches into this subject that we have, scrupulously avoid the errors of the statistical and medical pedant. Unfortunately, various writers, with preconceived notions, have set out commonplaces, and expounded them with importunate braying, and with the aid of artificially arranged experiments. Hence their technic and thought are straight off the bias. It is impossible to resist the impression that they sat down deliberately to weave a thesis, as a weaver makes a pattern. Such writers have an incurable color-

blindness as regards the characteristic shades of the salicylates. It is rare to find in one of these articles or monographs a quick and just apprehension of science along with a fine sense of method; a rational sympathy with medical progress corrected by a broad and deep philosophy. They write outside the scheme, and by prejudice and sheep-like instinct, contrive to make a debasing kind of beano out of what is a very delicate and difficult investigation.

The natural salicylic acid was obtained by Cahours (*Liebig's Annalen*, 1843, Bd. 48, p. 60). It is free from p-hydroxybenzoic acid, which is possessed of harmful physiological action. Charteris (*Pharm. Journal*, 1890, Vol. 21, p. 434) observes that the delirium after synthetic salicylic acid is caused by cresotic acid. A humorist, with which a wit is not to be confounded, could not have written the following: "More severe delirium was noted in four patients, two of whom received the natural salt and two the synthetic salt. Of the former, one was attributed to delirium tremens, and the other to cerebral rheumatism." The illiterate should write nothing but the list of examination questions, and that is not writing at all. On the other hand, it is a pity that the illiterate can write, and that he can read, that he is not illiterate literally; for then he would be something, and something not without its qualities.

A "pathological fracture" is usually due to a bone tumor (sarcoma, carcinoma, myeloma), cyst or gumma. An expert interpretation of a radiograph will best serve to distinguish these. The Wassermann reaction, it must be remembered, is sometimes negative in tertiary syphilis.—*American Jour. of Surg.*

THE INFLUENCE OF THYROID GLAND SUBSTANCE IN SOME CASES OF RHEUMATOID DISEASE.

BY

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Our conceptions of the natures of some of the chronic diseases have undergone considerable change of late years in the light of the growing knowledge which we are gaining, largely from clinical experience, concerning the inter-relationship which exists between the functions of certain glandular secretions in the body.

Biochemistry has taught us that the organic functions depend upon chemical reactions for their healthy performance, and the wonder is that these numerous and constant processes upon which health depends do not become more frequently disordered.

It is evident that certain diseases result from upsets in the coordination of these chemical reactions, sometimes due to excess some times to diminution, whether absolute or relative, of factors in the blood leading to an unbalancing of the harmonious co-relation of function which is essential for the maintenance of perfect health. In a paper which I published in the *Medical Press and Circular* in March, 1915,¹ I gave several examples of diseases due to this incoordination of function and of the ways in which they have been met but I did not refer to the rheumatoid diseases for

the reason that although empirically one appreciates that there is a type which is benefited by the administration of the thyroid substance, it is still a matter of difficulty to differentiate this type from others which do not appear to be related to absence or perversion of that particular secretion.

For many years the probability that certain of the rheumatoid diseases are associated with an alteration in the internal secretions has been before my mind. In 1893² I referred to the frequency with which ovarian or uterine disease had anteceded the cases of osteo-arthritis which were then under my case in the "Liverpool Home for Incurables" and my impression at that time was that the proliferation of the cartilage cells which led up to disappearance of the articular cartilages might have been due to a loss of some substance which controlled their growth. On this account, I gave many of the cases extracts of ovarian substance but without attaining any benefit, and not knowing what other particular secretions to try I obtained fresh blood (presumably containing a proportion of all the glandular products) from the abattoir, had it evaporated *in vacuo* so as not to destroy its contained living ferments, and administered the dry residue to my patients. The result of this treatment was in some cases very surprising as it was undoubtedly followed by considerable improvement not only in the rheumatoid diseases but in some others also. In the rheumatoid cases, it was especially in the earlier manifestations that good resulted and for a long time I used this product with some success.

It seems probable that it was the thyroid element in the blood that did the good but

¹ Incoordination of Function in Relation to Disease, *Medical Press & Circular*, March 10, 1915.

² The Inhibitive Functions of Glandular Secretions on Some Chronic Diseases, *Brit. Med. Journal*, 1893.

this did not occur to me until 1891 when a very remarkable and unique case of the disease came under my care at the "Home for Incurables." I quote my account of this case published in the Liverpool Royal Southern Hospital Reports for 1902³ because it was the first occasion on which I used the thyroid substance and it led to its employment in subsequent cases with considerable advantage.

of rheumatoid arthritis. The disease commenced in the right wrist, then affected in succession the right elbow, knee, ankle and foot, and later on all the joints of her limbs, including those of the hands and fingers and at length she became entirely crippled and bedridden. At the time of her admission to the "Home," the disease was still very active, manifesting itself not only in the synovial swellings in and around the



Fig. 1. Lower limbs of Case 1 previous to treatment.

The patient, a woman aged 62, who had been a hard and useful mission worker in one of the poor districts of Liverpool, had always enjoyed good health and there had been nothing either in her personal or family history indicative of gout or rheumatism. Three years before her admission she began to suffer from the ordinary symptoms

joints, but also in the intensely painful nodules which appeared from time to time on the aponeurosis of the occipito frontalis. The affected joints were swollen, and those of the hands and feet presented the usual characters of the synovial type of rheumatoid arthritis, there being fluctuating swellings about all the small joints without much, if any, implication of the cartilages.

Shortly after admission to the "Home"

³ Rheumatoid Arthritis and its Relation to Other Diseases, vide also "Blood as a Therapeutic Agent," *Lancet*, 1896.

this patient had a cerebral hemorrhage causing a right sided hemiplegia and temporary loss of speech. She did not entirely lose consciousness, and her aphasia did not last long, but the arm and leg remained helpless for many weeks and when at last some power did return to them it was not completely restored and the already crippled hands and feet became further distorted on the affected side by partial contractures secondary to the paralysis. Following this apoplectic seizure came an entirely new and very extraordinary train of events which was not easy of explanation. The main feature of the change consisted in a gradual swelling which took place in

of great depression, she frequently wept and took not the slightest interest in her surroundings. The condition of the feet and legs was so remarkable, their proportions so enormous compared with other parts that I am afraid my attention was diverted from the true nature of this case and I regarded it for a long time as due to solid edema with which we are familiar in bedridden cases of rheumatoid arthritis (but which I had not hitherto associated with a myxedematous explanation) and it was only the course run by an ulcer which appeared on the dorsum of the right foot, which led to a true interpretation of the case.

Acute local necrosis with deep ulceration constitutes a very serious complication in cases of rheumatoid arthritis. When these ulcers appear they almost invariably lead to general septic infection and speedy death. The first one which I saw appeared on the inner side of the left knee and perforated into the joint. In three cases they have appeared on the dorsum of the foot and in one of these an unavailing attempt was made to save life by amputating the limb which had become gangrenous. In two cases they have resembled the bedsores in myelitis in their situation over the sacrum where they have been deep with gangrenous surroundings, and in each case they were directly related to the death of the patient. With these histories in view you may well imagine my concern when a necrotic change commenced on the dorsum of the foot in the case which is now under consideration, first a pinkness of the surface, then a pulpy softening, and by degrees the appearance of a deep ulcer, quite round with walls so cleanly cut that it might have been gouged out with a large cork borer. This ulcer remained for months and resisted every treat-



Fig. 2. The lower limbs of Case 1 following treatment.

her limbs and trunk, but especially in the lower extremities, until to all appearances she was in a condition of anasarca. The trunk and upper extremities were only moderately swollen, but the lower extremities became simply enormous, the calves measuring 22 inches in circumference. There was no albumin and nothing pointing to a cardiac or to a pulmonary explanation of the condition. Her mental state was one

ment which I could think of, but it did not act like the other ulcers of which I have spoken. It was indolent, not an absorbing surface, there was not very much discharge from it and it was painful. Such were its main characteristics. Looking at it one day wondering what could be done to stimulate it and promote some activity in the reparative processes, it suddenly occurred to me that its walls looked rather like mucoid tissue and I confess that it was not till then that it flashed upon me that the case itself, whatever its primary nature might have been, had myxedema complicating it. She was at once put on thyroid in gradually increasing doses until she was taking 15 grains daily, and the ulcer was dressed with a little of the powdered gland in an ointment basis. The result was magical, not only did the ulcer heal, but the swelling of the arms and trunk vanished and that of the legs diminished, so that within three months the calves measured only 14 inches instead of 22 inches. With this, the mental hebetude cleared up and she became quite a cheerful person; but another interesting thing happened and this is the point of the whole story, viz., that the condition of the joints improved, they became less painful, less swollen and more mobile, this being exemplified in the condition of the neck formerly stiff, painful and creaking, now painless and movable. Such is the history of this remarkable case. The feet were never thoroughly reduced to their proper shape.

Another case which well illustrates the remarkable influence of thyroid in a case of rheumatoid disease is quoted in the same journal!—that of a young lady student who had been obliged to practically abandon her studies for a degree in science owing to the crippling of her limbs. She could not hold

a pen properly, her fingers were spindled, semi-flexed and very painful. Her knees had become affected as had also the elbows and shoulder joints of both arms. The small joints of the fingers were very swollen and she had to wear gloves several sizes larger than usual. These local symptoms were associated with neuralgic pains in the arms and she presented the usual coldness of the hands and feet. Her fingers became dead white and numb so that even in warm weather, if her hands were exposed, they became numb with cold. The palms and soles were sweating freely. An important point in the family history was that her mother had suffered from myxedema. There was nothing abnormal to be observed about my patient's thyroid gland. I gave her 5 grains of the thyroid gland substance daily with the result that in three weeks she was a new woman, her pains all gone and she returned to her work, took her degree and I have recently heard that there has not been the slightest return of the symptoms since then.

Quite recently a very striking example of the way in which some of these symptoms may be related to the pedolescent period of life came under my notice. This was a girl aged 14. She was brought in the first instance owing to frequent attacks of cramps in the hands associated with rheumatic pains in one of her shoulders. Later on these cramps became very marked and on one occasion when I saw her the fingers and toes were in a condition of rigid spasm and there was also painful rigidity of one of the knees. There was also the so-called "rheumatism" in the arms with shooting neuralgic pains running down into the fingers. Her hands and feet were cold. She had suffered very markedly from chilblains during the spring. The acute symptoms were

relieved by the administration of camphor and the thyroid substance has apparently since then ameliorated the general condition.

Now these are manifestly cases of incoordination of function and they bring to mind the point that rheumatoid disease of this character is almost invariably a disease of young womanhood and that it presents some prodromal and concomitant symptoms resembling those which characterize that other disease of young womanhood, namely gastric ulcer⁴ with which it may have some relationship. In both of these diseases the prodromal symptoms are "Raynaud" like in character, depending upon vascular spasm. In both there is coldness, blueness or deadness of the fingers and sometimes of the feet and not infrequently cramping of the extremities, but in the one case the peri-articular structures are attacked and in the other the little wedge like branches of the coronary arteries. Both of these diseases are, I believe, related to an upset in the co-ordination of some of the internal secretions which undergo such marked changes in early womanhood and while being certain that the rheumatoid condition is relieved by thyroid substance, I am disposed to think that if taken early enough, the gastric one will be similarly benefited by it. One can only speculate as to the relationship which thyroid secretion bears to the particular form of rheumatoid disease which is influenced by it. It is possible that its perversion gives rise to toxic substances (ergot like in their action) which are cumulative and difficult of elimination. It is evident that there is no complete interference with the thyroid function because myxedema is

not an essential feature of this type of disease and furthermore it cannot be entirely related to loss of balance between the thyroid secretion and those of the vaso constricting glands because the general blood pressure is not greatly raised and the symptoms are in the main local and selective in character.

THE THROAT IN RELATION TO RHEUMATISM.

BY

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The condition or conditions known to the medical profession and the public as rheumatism are extremely difficult, almost impossible of correct definition. We are only now beginning to realize what rheumatism is not, more by a process of exclusion than by any other means. Possibly we may in the course of time arrive at a true definition of the condition. The great obstacle in the way of this event is that the disease exhibits itself in such protean forms, and it is hard indeed to draw the distinguishing lines. By some it is said that rheumatism is not related to acute rheumatism nor to arthritis nor to gout.

As a matter of fact, there are not even strictly scientific terms to signify the so-called rheumatic states, and at this stage, it might only make confusion worse confounded to endeavor to supply these. Therefore, it will be wisest to rest content with the appellations now in use, as time has so hallowed their employment, that to try to substitute other terms would not improve the situation in the least. In this paper certain rheumatic affections of the throat

⁴Vide Some Thoughts and Suggestions Concerning Gastric Ulcer, *Liverpool Medico-Chirurgical Journal*, 1905.

will be somewhat briefly considered without much regard to the fact that gout may not be related to rheumatism nor rheumatism to arthritis. Of course, those sore throats which may be ascribed to rheumatism present as many anomalies in terms as rheumatism itself. These are known as rheumatic sore throats, rheumatic laryngitis, rheumatic angina or rheumatic pharyngitis, when the larynx is not affected. Then there are affections of the throat attributed to a gouty or lithemic diathesis. Further, as Freudenthal has pointed out Thorner has described a case of polyarthritis rheumatica, and lastly there is rheumatic gout or arthritis deformans of the larynx. It goes without saying that many cases of throat affection due to rheumatism or gout are not reported, for the reason that they are not recognized as such, the condition is not diagnosed correctly, and it is not because of their rarity. Indeed to quote Freudenthal again, in predisposed persons rheumatic laryngitis may be for weeks and months the only symptoms of rheumatism. As a rule, when the larynx is affected, it is taken for granted that it is merely a case of laryngitis and treated locally rather than constitutionally. I must freely confess that I have been as great a sinner as many of my medical brethren in this respect, and no doubt have frequently overlooked, or have not looked for rheumatic or gouty symptoms in cases of throat affections, which have come under my notice. However, I have turned over a new leaf and investigate with greater care by far all sore throats which I am called upon to treat. Watson Williams in remarking upon the connection between throat affections and rheumatism, points out that such connection is not especially well understood, and that gouty affections of the throat are even more infrequently

recognized. Semon and Williams have this to say on the subject; "the so-called lithemic diathesis is a much more frequent cause of throat disease than is generally believed, the throat being often affected in persons who present no definite evidence of gout or who have never had any acute joint inflammation." The symptoms are acute or chronic. The acute forms, gouty pharyngitis, tonsillitis, or laryngitis may result from exposure to cold or may occur without any obvious local cause in predisposed persons, although according to Williams there is nothing in any way characteristic in the appearance presented one of the usual features is the red glazed surface of the mucous membrane which Sir Dyce Duckworth aptly compared to mucous membrane freshly brushed with glycerine. The uvula is sometimes not only swollen but thick and elongated as indicative of gout, particular stress should be laid on lateral pharyngitis with a sense of uneasiness or pain on swallowing, the pain may be of a darting nature and shoot up to the ears. Thomson in his standard work on the throat, refers to the fact, that in the larynx, gouty concretions may appear in the crico-arytenoid joint, causing ankylosis to take place in a vocal cord simulating malignant disease. Deposits of urate of soda may occur in the submucous tissue over the crico-arytenoid joint, while the surrounding tissues and the articulation itself may remain quite unaffected. According to the same authority, the crico-arytenoid joint is apt to be implicated in rheumatism and if it is the only articulation affected the symptoms may be mistaken for those of acute perichondritis.

Thomas states that acute gout in the pharynx is characterized by, first, sudden acute invasion and rapid subsidence. Second, sharp fever and marked general

symptoms. Third, intense local pain almost out of proportion to the visible lesion. Fourth, symptoms which resemble those of a peritonsillar abscess, but tending to invade the palate and pharynx generally or spread down to the larynx. Fifth, of an essentially inflammatory nature, giving the throat a deep red congested look with swelling of the faucial pillars, and soft palate and flabby uvula, and tumefaction of the posterior pharyngeal wall. Sixth, complete absence of membranous exudation. Seventh, no affection of the glands at the angle of the jaw. Eighth, no suppuration. In fact, the diagnosis of gouty affections of the throat are much more simple than that of rheumatic affections of the same. The peculiar patchy aspect of the inflammation is generally a sufficiently distinctive feature. On the other hand, as remarked before, the diagnosis of rheumatic affections of the throat is usually extremely difficult owing to the fact that rheumatic pharyngitis, tonsillitis or laryngitis present no distinguishing characteristics. However, it may be said that stiffness, pain and inflammation of the fauces often precede an attack of acute rheumatism, and may subside or may be regarded as of no moment when the acute joint symptoms are manifested. Again the throat symptoms may last for days or weeks without rheumatism exhibiting itself in other parts of the body. Freudenthal is of the opinion that the large majority of cases of acute follicular tonsillitis are of rheumatic origin. Of course, when symptoms of rheumatism occur elsewhere than in the throat, the diagnosis of rheumatic laryngeal affections is obvious. When, however, the rheumatic throat affections occur independently, it is quite another matter, and not infrequently a correct diagnosis is only possible by excluding other causes. Emphasis

then must be laid on the need for correct diagnosis of rheumatic throat affections, for it is patent, that if this be not done, effective treatment is impossible. In my opinion, it may be well when suspicion exists that a sore throat is of rheumatic origin that remedies for rheumatism, the salicylates, in some form, be employed.

The probable infection of the tonsils by streptococci, causing rheumatism has been recently the subject of extended investigation. Tonsillitis and rheumatism have been long associated, and it has been also regarded as more than a coincidence, that tonsillitis so frequently went before an attack of acute rheumatism. The suspicion, therefore, arose that the tonsil might afford entrance to an organism. There has been and is a considerable amount of scepticism as to "*micrococcus rheumaticus*" being a causal organism of acute rheumatism, but the results of the investigations of Poynton, and Paine, are entitled to very serious consideration. As is pointed out by Pybus, these investigations supplemented by those of Beattie, Dixon, Walker and others have shown that the organism found in acute rheumatism, although appearing in the lesion as a diplococcus, on cultural examination grows in chains and belongs to the streptococcus group. Pybus is of the opinion, that the evidence that this organism is the chief causative agent in the production of acute rheumatism is accumulating, and its acceptance among the profession is gaining ground. No doubt, Pybus refers to the profession in Great Britain, for in this country, there are not many who strongly believe in this theory. Nevertheless, as said before it would be very unwise to scout the possibility of this being true, and at any rate, the infection theory is worthy of earnest consideration. What is

the evidence then that the tonsil is the portal of infection or rather one of the chief source of the organism? The evidence is as follows: Rheumatic fever is often preceded by an attack of tonsillitis, and recurrence of the lesions may be preceded also by tonsillitis. The presence of the streptococcus of the rheumatic type in the tonsil has been experimentally proved. The tonsil can be found affected in most cases of rheumatism, and lesions can be found there in persons dying of endocarditis, acute or chronic. The original case of Poynton and Paine was that of a patient with chronic endocarditis. Following an attack of tonsillitis, organisms were isolated from the tonsil showing the usual characters of their organism. On inoculation into a rabbit endocarditis was produced. According to Pybus these experiments have been so often performed by Poynton and Paine, all Koch's postulates being fulfilled that the chain of the organism being the one concerned in the production of rheumatism seems complete. Experiments by Beattie and Yates go to strengthen the evidence that the organism is largely responsible for the causation of rheumatism. Material from various lesions in the joints, throat and blood was examined in 192 cases, rheumatic and otherwise, for streptococci. The organism was obtained in 48 of these cases. Seven presented a definite disease which have no relation to the present question. Of the remaining 41 cases there was a rheumatic history in 31. The organism from these in 19 cases, or 61 per cent. on inoculation produced typical lesions in rabbits, these lesions being characterized by acute non-suppurative synovitis. Of the 11 negative results in rheumatic cases, 8 were from the tonsils. In each of these cases a single colony was subcultured, and there

being many varieties of streptococcus present in the tonsil it may be presumed that a non-virulent form was obtained. If 2 additional cases, presumably rheumatic are included, the positive results reach 70 per cent. in these cases, while in the non-rheumatic cases typical arthritis was not produced in a single instance. In the experiments with organisms obtained from the tonsils of those with a rheumatic history, 15 in number, a positive joint result was obtained in 7 or 47 per cent. Of inoculation from the tonsils where no history of rheumatism was obtained, 5 in number, septicemia was produced in 4 animals and arthritis in 1, the latter being possibly of the rheumatic type. Thus it may be gathered from the investigations of Beattie and Yates that it seems, at any rate, possible, nay even probable that rheumatism is brought about by an organism and that it obtains ingress by way of the tonsil.

Gerhardt has termed the tonsil a physiological wound, a not inapt name, seeing that it affords an opening into the system which if not maintained in good health may permit of the entrance of germs of infection. Evidence, in fact, and the evidence in particular brought forward by Poynton and Paine, and more or less substantiated by the result of the investigations of Beattie, Yates, Dixon, Walker and others appear to point to the tonsil as one of the chief sites of entry, if not the chief site, for the rheumatic organism. This is not to say, however, that other factors are not concerned. As stated before, the tonsils affected by rheumatism or if the germ theory be believed, infected by the organism of rheumatism, present no characteristic size, shape or appearance. All varieties may be represented. The symptoms may be those of acute tonsillitis, or the process may be a chronic one

no fever being present and the tonsil itself exhibiting no signs of active mischief.

Freudenthal states that it is an established fact that angina is often the forerunner of the initial stage of rheumatism and Fielder considers rheumatic angina as the first effect of the virus inhaled with the air and caught in the tonsils or the neighboring parts, often after an interval of varying duration, sometimes long before the general infection of the system takes place.

Freudenthal has called attention to another pathological condition seen frequently by him and which he deems due to rheumatism such are benign ulcerations of the pharynx. He has only witnessed these in persons suffering from chronic rheumatism. Kyle in his valuable work on the throat and nose mentions that ulcers of this nature and in the situation described may occur, although I must confess that no cases of this character have come within the scope of my experience.

Freudenthal, it should be said, mainly bases his belief that these ulcerations are due to rheumatism to the fact that recovery has almost invariably followed the administration of salol.

With regard to treatment of rheumatic and gouty conditions of the throat, treatment rests solely upon a correct diagnosis. When a diagnosis of either conditions is made, the general course to pursue is to treat by means of remedies which have proven to be of the greatest service in checking or curing the disease itself. In the instance of rheumatic affections of the throat the salicylates are the mainstay, or it might be stated the only really effective treatment; for gouty affections of the throat colchicum and suitable diet. Although a surgeon myself, I am chary of operating unless indications distinctly point that way.

I am not one of those who think that the tonsil has no function although, of course, after a certain age its functioning powers are very largely diminished if not entirely lost.

The object in view so far as the tonsil is concerned is largely to prevent further infection or the recurrence of the disease, and in the case of gross disease causing glandular or systemic infection and when a good recovery has been shown to be impossible, the only rational course, appears to me to be enucleation of the tonsil. This operation should be performed during a quiescent period.

I am fully conscious that the foregoing description of a most important subject is both discursive and inadequate and I should not have been so presumptuous as to write upon it had I not desired to emphasize a few points. One of these and the most insistent is that rheumatic and gouty affections of the throat are frequently overlooked or misinterpreted when if diagnosed correctly they might be effectively treated. This is especially so with regard to rheumatic affections of the throat. I would, therefore, urge that the very greatest care be taken to recognize the true nature of throat conditions and if only suspicion exists that rheumatism is the factor or a factor in the causation that suitable treatment should be employed at once. I am convinced that if this were done most happy results would ensue. Another point upon which I would like to lay stress is that the theory of infection by way of the tonsil first promulgated by Poynton and Paine should be more closely studied. There are many features in its favor, although in the opinion of many and particularly in this country there is a good deal of scepticism with regard to its validity. This, however, is no

reason why their claims should not be exhaustively studied and elucidated as far as possible.

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THE TREATMENT OF CHRONIC INFECTIVE ARTHRITIS.

BY

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The importance of this subject justifies its repetition from time to time, even although one has little or nothing to add to the known facts and reasonable beliefs entertained by the medical profession, both as to the cause and the treatment of chronic infective arthritis. The treatment which will be advocated is based upon a certain conception of the causative factors concerned—a conception which will be elaborated later.

I propose devoting special attention to the treatment of gonococcal arthritis, rheumatoid arthritis (the atrophic type) and osteo-arthritis (the hypertrophic type).

Gonococcal arthritis is due to an infection of one or more joints with the gonococcus, and the term should be restricted to such cases. Unfortunately many patients are said to have "gonorrheal" arthritis, simply because there is a more or less recent history of a specific urethritis, whereas the gonococcus has played no part in the incidence of the arthritis other than preparing the soil for infection by other organisms harbored within the body. Such cases properly belong to the second or third types mentioned above. Should the affection be

due to the gonococcus, the treatment of election is undoubtedly inoculation with a gonococcus vaccine, aided of course by those other measures commonly invoked, such as rest of the part, relief of pain, etc.

A stock vaccine prepared from many strains of the gonococcus is usually sufficient and the appropriate dose, in my experience, is from two and a half to ten million every second or third day. I am aware that some observers use much larger doses. For example, Cole and Meakins¹ give two to three hundred million every seven or ten days; Irons² twenty to fifty million every three to seven days and Hartwell³ ten to twenty-five million every two to four days. But whatever the ultimate dose selected in any given case, the initial dose should not exceed five million and no dose should be persisted in that causes increased pain or swelling with added general discomfort. In short the optimum dose is that which avoids these symptoms of over-dosage; and on the contrary is followed by an alleviation of painful or uncomfortable symptoms. Should the initial dose of five million have no effect, then double the dose, successively, at intervals of several days until the optimum is reached. The results to be expected from specific treatment in this disorder are fairly exemplified in the combined experience of three observers (Irons, Hartwell and MacDonald),⁴ namely: out of 96 cases, 27 were cured, 52 benefited, and 17 not improved.

Whereas the etiology of gonococcal arthritis is definite, such cannot be said with equal certainty of the two other types of chronic arthritis, the atrophic and the hypertrophic, although the evidence that these are also infective is most convincing. It is impossible to consider this subject in the detail that its importance merits, but one out-

standing fact is that two observers have produced a proliferative non-suppurating, degenerative arthritis in rabbits by inoculation with a strain of streptococcus recovered from a case of chronic arthritis in man. Davis⁵ and Jackson⁶.

Moreover a large number of therapeutic measures, mostly empirical or at best pseudo-scientific, have had and still have their various adherents. Whatever may be our especial belief, it cannot be denied that hydrotherapy, electrotherapy and many another therapy have wrought cures or at least benefited many sufferers, probably because a general improvement in health has brought about increased resistance to the offending micro-organisms or perhaps occasionally because a focus of infection has been unconsciously controlled. Nevertheless it is certain that the majority of cases of these two varieties of arthritis are progressive and incurable. The average of medical experience will bear testimony to this, as will also homes for the incurable and the aged, infirmaries and even the wards of any large general hospital.

In this connection I recall that, some years ago, three of the most distinguished physicians of England separately saw a patient afflicted with chronic arthritis. Each had different advice to offer but all agreed that the condition was incurable and would be progressive. They agreed only in that they conformed to the average experience of the profession in such cases. Later I applied to this case the methods about to be described and with satisfactory results.

Before proceeding to discuss these methods, however, I propose to formulate a conception and relate the factors concerned in the incidence of an arthritis which may or may not become chronic or progressive.

There is presumed:

First: The existence within the body of some focus or foci harboring micro-organisms possessing an elective affinity for arthritic structure (bone, cartilage, ligament or synovial membrane).

Second: The accession of these organisms to this structure.

Third: The lowering of resistance of one or more joints to these micro-organisms as a result of trauma or consequent upon a general depression of the body tissues to infection.

The elective affinity of certain organisms for particular tissue is well-known; for example the toxin of the bacillus of tetanus picks out central nervous tissue; that of the bacillus of diphtheria, the peripheral nervous tissue; the pneumococcus elects especially respiratory tissue; and the streptococcus erysipielatis, the skin and subcutaneous tissues. These are examples of grosser elective peculiarities of micro-organisms. Some of the finer are to be found in the biological activities of certain others; for example the organism of anterior poliomyelitis selects the large motor cells of the anterior horns; the bacillus of acne the pilosebaceous follicles; the micro-organism of acute rheumatic fever, especially in children, the endocardium, and to a less degree arthritic tissue, (although in adults this structure is more susceptible to the organism than is the endocardium, and so we find in adults arthritis rather than endocarditis).

These known facts have led to another conception of far reaching importance, namely that in the class of the streptococci minute variations, incapable of demonstration apart from their biological activities occur so that certain tissues alone are subject to infection.

In this connection Rosenow remarks in a recent paper:

"I have demonstrated that streptococci from appendices in appendicitis, from the walls of the gall-bladder and the centre of gall-stones in cholecystitis, from the depths of ulcers of the stomach and duodenum, from the articular exudate in rheumatic arthritis, and the organisms from the subcutaneous nodes in erythema nodosum tend to localize electively in the tissues from which they are isolated. It can also be shown that the probable infective atria (tonsils, pyorrheal pockets, suppurating sinuses, etc.) in these diseases harbor streptococci and other organisms showing similar elective affinity when infected intravenously into rabbits."—*J. A. M. A.*, 1915, p. 1968. His work on the mutability of certain types of streptococci is also highly suggestive.⁸

It is also probably true that notwithstanding the advent of infecting micro-organisms (in sufficient numbers) unless they are highly virulent, they will not overcome the barriers of a natural immunity to such infection; and hence we must consider those predisposing circumstances or events that prepare the body soil for a favorable reception of the invaders, which in cases of arthritis, according to our conception, are always ready for attack from their nidus of infection.

The general resistance of the body is lowered, among other things, by prolonged or unusual exposure of the body to cold, excess of food, work, and worry—or too little food, sleep and exercise and the incidence of other disease, nephritis, gonorrhea, diabetes, etc.

The local resistance in a joint is lessened by trauma—direct injury or even strain.

So it is that given the presence of micro-organisms within the body, possessing an elective affinity for joint structure and a lowering of its resistance to infection as the

result of general or local causes, then arthritis is likely to result.

It is essential to note that not only must the micro-organisms be available for infection but the soil must be prepared, for it is certainly true that many individuals harbor potential foci of infection for years without their joints becoming involved.

The cure of any infection is dependent upon eradication of causative micro-organisms, attenuation of their virulence, or the neutralization of their toxins. In acute infectious disorders, as Sir Almroth Wright has pointed out, nature cures by auto-inoculation. That is, to say, the causative organisms *themselves* reach the tissues responsible for the manufacture of antibodies, and stimulate them to produce those very antibacterial substances which in turn either destroy the organisms or neutralize their toxins. Auto-inoculation very readily occurs in acute infections, because the organisms are usually in near contact with the blood or lymph streams. In most chronic infections, however, the focus is more or less isolated so that as a rule the micro-organisms or their toxins do not escape sufficiently to stimulate the production of antibodies. Thus auto-inoculation, nature's most valuable method of controlling a bacterial infection, is in abeyance. On the other hand it is conceivable that the organisms or their toxins might from time to time find their way into lymph or blood streams in considerable quantities and attack susceptible tissue, causing, for example, arthritis and at the same time poison the cells responsible for the manufacture of antibacterial substances. Such repeated infection would readily account for the progressive character of many cases of chronic infective arthritis.

If this conception concerning the factors

responsible for the incidence of that variety of arthritis which becomes chronic, be correct, then it follows, naturally, that eradication or control of any nidus of infection is essential to successful treatment of such cases. The discovery of such a nidus therefore, is of the first importance and I propose to consider this particularly.

A generalization that helps in the hunt for a focus of infection is that this is likely to occur in "areas of possible bacterial stagnation," where organisms can flourish and produce their toxins. These areas are so placed that their contents are discharged outside of the body with difficulty (or not at all). But should they reach the lymph or blood streams they may from time to time gain access to whatever tissue of the organism they particularly elect. Hence if the soil be prepared those micro-organisms which select joint structures are capable of causing an arthritis, and so long as the focus of infection exists, it is likely to be progressive because of repeated reinfection.

According to my experience the commonest points of such bacterial stagnation are:

First, about the teeth.

Second, in or about the tonsils.

These should be carefully investigated first of all. If no focus is found there, then a careful search should be made elsewhere. Apart from the teeth and the tonsils there are certain other areas of possible bacterial stagnation and I propose to enumerate these as follows:

- A. The upper respiratory passages:
 1. The antrum of Highmore,
 2. The frontal sinus,
 3. The ethmoidal cells,
 4. The sphenoidal sinus.
- B. The lower respiratory passages:
 1. Chronic bronchitis,
 2. Bronchiectasis.
- C. The genito-urinary system:
 1. Pyonephrosis,

2. Cystitis,
3. Prostatitis,
4. Salpingitis.
5. Endometritis,
6. Inflammation of vesiculæ seminales,
7. Pelvic peritonitis.
- D. The gastro-intestinal system:
 1. Intestinal stasis,
 2. Chronic appendicitis.

Of these possible foci of infection the following are of particular importance:

1. Infection of the antrum Highmore and ethmoidal cells,
2. Intestinal stasis,
3. Prostatitis,
4. Salpingitis,
5. Chronic appendicitis.

But inasmuch as a nidus of infection is most common about teeth or in relation to tonsils I propose devoting special consideration to these.

Areas of bacterial stagnation occur about teeth in respect to:

1. Pyorrhea alveolaris,
2. Chronic alveolar abscess,
 - (a) Incompletely discharging through a fistulous opening.
 - (b) Closed and usually at the root of one or more apparently healthy teeth.
 - (c) In connection with teeth whose roots have been incompletely filled, especially crowned roots.
3. Faulty bridge-work; and the usual fault is that the anchoring metal is left in such close apposition to the gums that infection is almost certain to occur.

In chronic infective arthritis the focus of infection is so very commonly found about the teeth that it is always essential to investigate them closely.

1. Concerning pyorrhea alveolaris one should note that some of the severest cases are due to deep infection of the alveolar margin without the recession of the gums that ordinarily characterizes this disease.

2. The diagnosis of the incompletely discharging alveolar abscess is usually easy

because of the fistulous opening into the mouth.

3. In some cases the abscess lies at the roots of teeth, apparently healthy, and indeed, it more often than not gives no trouble and is quite unsuspected. In doubtful cases investigation is incomplete until skiagrams have been taken of the alveolar margins.

4. This especially applies in all cases of crowned roots. Experience has amply shown that many crowns are placed upon roots which have been incompletely filled and are thus particularly susceptible to injection. It is a good rule to always suspect as guilty, all crowned roots unless they are proven innocent by X-ray examination.

So far as tonsils are concerned it is important:

1. To consider as probably infected all those cases giving a history of "ulcerated sore-throat" (probably "quinsy") or repeated attacks of tonsillitis or marked pyorrhea. It should especially be noted that diseased tonsils are often small, and all tonsils adherent either to the anterior or posterior pillars are probably diseased. This observation is especially pertinent, for frequently small adherent tonsils on removal are found to be badly diseased.

What then is our attitude of mind towards a given case?

First. To thoroughly investigate such a case for a focus of infection and if possible to find it.

Second. To take cultures from it if possible and prepare autogenous vaccines and;

Third. Eradicate such focus or thoroughly drain it so that it is no longer an area of bacterial stagnation, and whilst it is impossible to consider all possible points in connection with the control of the various potential foci of infection, still one can indicate certain of the most common and important considerations.

These considerations are:

First. Whatever other means are undertaken for the cure of pyorrhea alveolaris, the essential is draining of the pus pockets and control of the infection by topical applications. The technic of this demands particular skill and patience and I am in the habit of referring my patients to someone possessing special knowledge in this branch of dental surgery.

Second. The treatment of alveolar abscess should not be undertaken without the assistance of a skiagram and even then demands particular skill. Often it is expedient to remove the tooth whose apex is abscessed. If, however, X-ray investigation be not possible, a tooth may reasonably be suspected if,

(a) There is a history of so-called "gum boil" near it,

(b) The tooth is even slightly loose in its socket,

(c) Tapping the tooth causes a sensation even of slight tenderness.

Third. All crowned teeth should be suspected and if X-ray examination be not available then have the crown removed.

Not infrequently pus will be discovered beneath it.

Fourth. Faulty bridge-work should be cleared out completely and if in doubt a plate substituted.

Fifth. Tonsils should be removed, only by complete enucleation.

I have been in the habit of supplementing control of foci of infection with inoculation of vaccines prepared from whatever micro-organisms recovered from pus or diseased tissue. The commonest organism found about teeth or in tonsils is a short chained streptococcus which grows readily on human blood agar, sometimes causing a green discoloration of the hemoglobin (streptococcus viridans) but as often not. At times it is hemolytic. Sometimes a staphylococcus also occurs in primary cultures and usually it is the aureus. I usually administer forty millions of streptococcus and, if the staphylococcus aureus is also present, three hundred millions of it twice each week over a period of some months.

I find it impossible even after an experience of several years to appraise the value of vaccines in the treatment of chronic arthritis (except in the gonococcal group); nevertheless my strong impression is that autogenous vaccines are of service.

On the other hand such an excellent ob-

server as Billings⁹ expresses his firm belief in the value of autogenous vaccines in cases of chronic infective arthritis and also Creeley¹⁰ among many other observers. Certainly one would expect them to be of service on theoretical grounds, and the sum of practical experience seems to confirm this.

Sometimes the infection occurs in such situations that it is difficult or impossible to completely eradicate it; and then autogenous vaccines must be our mainstay—such as in *certain cases* of pyorrhea alveolaris and alveolar abscess, ethmoiditis, otitis media, cystitis, prostatitis, chronic bronchitis and bronchiectasis.

Whilst I have dwelt particularly upon one essential part of the therapeutics of chronic infective arthritis, it by no means completes the subject. Other measures are usually necessary such as general medical and hygienic treatment (control of digestive disturbances, constipation, pain, etc.) Good nursing and massage are often indispensable and frequently surgical interference is necessary for the mobilization of joints, stretching of tendons, etc.

It would unduly lengthen this communication were I to recite the details of a number of cases even if it were advisable to do so. It is, however, scarcely necessary for there is already a large number in the literature. My own experience of a considerable number of cases coincides very closely to that of others who have been guided by the same principles of treatment, so that if further details of cases be desired two excellent papers may be referred to, one by Billings¹¹ and another by Young.¹²

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THE ANNOTATOR

Honor for Dr. James Mackenzie.—The news has just come from England that the king has conferred upon Dr. James Mackenzie the honor of knighthood. Perhaps, no name in present day medicine is better known and more highly respected than that of James Mackenzie. It will be no exaggeration to say that as a result of his investigations our knowledge of the heart's action has been immensely increased. Indeed, he has effected a revolution in this direction, and as a consequence of his studies present day methods of treating certain forms of heart disease are sane and rational, and based upon accurate knowledge. More than any other man, Mackenzie has made possible the correct diagnosis of several obscure types of heart disability.

The career of this reserved, unassuming Scotchman has been quite in keeping with his character. During twenty-eight years he carried on a large general practice at Burnley, a large factory town in the cotton district of Lancashire. While engaged in the arduous and tedious work of such a



practice he yet found time to concentrate his attention on those researches, the outcome of which has gained for him world-wide renown. Possibly, he is more distinguished for unfailing tenacity of purpose and persistency than for brilliancy, but of such metal are the best research workers formed. A great medical scientific discovery seldom comes as a sudden inspiration but results from long and patient study. The individual who most excels in research work is the one who, although, of course, endowed with good brain power possesses the capacity for untiring industry. He also has need of a sound constitution, for such work makes constant demands on the vitality. Mackenzie is the true type of the successful research deliver, physically and mentally. He has the Scotchman's hardy frame and constitution together with his pertinacity and caniness. The British profession hailed with enthusiasm news of this deserved honor. The American medical profession to whom the name of Mackenzie is well known will join with their British confrères in congratulations to this great Scotchman. The King in honoring Mackenzie has honored England and himself.

Cerebrospinal Fever at the Western Front in Europe.—

On the whole, diseases in epidemic form have been conspicuous by their absence in the war zone of Belgium and northern France. There has been a good deal of influenza, pneumonia and the ailments traceable to exposure. The most important disease, however, at any rate among British troops, is cerebrospinal meningitis. Typhoid fever is prevalent to a certain extent in the French fighting force, but owing to the extraordinary precautions taken by the British medical officers, its incidence in the British expeditionary army, since the war began is just about 0.1 per cent. The first cases of cerebrospinal fever occurred in



the early part of January and the disease is still spreading. Although the number of cases from a military point of view is unimportant, the malady is complicated and interesting to study. According to some authorities it goes through three stages, beginning with an acute catarrhal inflammation in the fauces or posterior nares, followed by the entrance of the diplococcus into the blood, producing a septicemia with severe symptoms like those of influenza, and finally leading to meningitis with all its distressing characteristics.

Sir Wilmot Heringham writing in the *St. Bartholomew's Hospital Journal*, (May, 1915), says that while this course may describe some cases, it is certainly not typical of all. The disease is apparently not contagious in the ordinary sense, yet is very widespread. In the beginning of the epidemic in northern France, epidemic cases appeared from the most distant points at the same time. Heringham states his belief that the diplococcus is carried in the fauces and that the number of those who harbor the germ there is probably very great.

In cases occurring in British soldiers the diplococcus, however, has not yet been found. Several of those stricken died, but of those who recovered none have shown any permanent nervous sequelae. This result does not seem to be quite in keeping with the outcome observed in other epidemics of meningitis.

It is true, that adults do not usually suffer from the after effects as severely as children, but it is to be expected that after a serious attack even an adult would show the effects for a considerable time. Possibly, the absence of sequelae may be accounted for by the fact that the worst cases all died and those who recovered were only the very mildest. It will be interesting and instructive to learn more of the experiences of British medical officers at the front, with cerebrospinal meningitis. It may be that modifying influences have altered the character of the disease very considerably, a result more easy to believe today, now that the work of Rosenow and others have shown us how subject pathogenic organisms are to environal conditions.



Edited by Dr. J. W. Wainwright.

Ultra Violet Rays in Senile Gangrene.—Kriser, (*Munchener Med. Wochenschrift*, December 15, 1914), gives the history of a case of senile gangrene in a patient aged sixty years, with a blood pressure of 165 m. m., an accentuated second aortic sound and pain in the great toe of the left foot of six months' duration, during the last three months of which dry gangrene had been present. The foot was edematous with the involvement of the two adjoining toes. Pulsation in the dorsalis pedis was absent. Treatment began with exposure varying in duration from two to eight minutes both anteriorly and posteriorly with the patient resting alternately on the back and abdomen. The distance of the tubes varied from one meter to seventy c. m., while treatment was administered at intervals of from one to five days, depending upon pain and other symptoms.

The gangrenous spot separated, leaving a healthy granulating surface, while blood pressure was permanently reduced. Edema appeared several times during treatment which lasted two months, but disappeared in a few days after application of Burrow's solution. The author regards this treatment of distinct advantage in beginning gangrene due to arteriosclerosis.

Argobol.—Puppel, (*Munchener Med. Wochenschrift*, December 22, 1914), reports on a new silver preparation, argobol, a yellow-white powder, insoluble, which is claimed contains twenty per cent. of silver in the form of the phosphate, which has been used in gonorrhea, acute, subacute and chronic; in metritis and vaginitis due to

bacillus coli. Some cases of acute gonorrhea were cured without complications. Average duration of treatment of acute gonorrhea was two months. Argobol was used one to three times a week; omitted during menstruation. It is indicated in all conditions of gonorrhea, in purulent inflammations of the vagina and uterus and in ectropion of the cervix with erosions. No irritation followed its application, nor was there staining of the clothing.

Sodium Bicarbonate.—Sodium bicarbonate in large doses may cause an increase in body weight due to retention of chlorides with resultant retention of water which may assume the appearance of edema, reports Levison, (*Journal American Medical Association*, January 23, 1915). The increase of weight or edema will most likely appear during the administration of the sodium bicarbonate to cachectic diabetics with acidosis, but can be produced experimentally in normal individuals.

Hot Water in the Treatment of Pruritis Ani.—A. B. Cook claims in his work "Diseases of the Rectum and Anus," according to *The New York Medical Journal*, February 12, 1915, that one of the best remedies in this condition is hot water. He states that it should be applied just before retiring and be used as hot as can be borne for at least ten minutes. Other agents recommended as generally useful are phenol, either in lotion or ointment, the strength varying from one to five per cent.

Cook states that citrine ointment is most useful.

Noviform.—Bernoulis, (*Munchener Med. Wochenschrift*, January 19, 1915), has been used in the treatment of blepharitis with better results than when white precipitate or yellow oxide of mercury ointment was used. It does not irritate, while the disease is markedly shortened. It is applied as a five to ten per cent. ointment two or three times daily. In eczematous conjunctivitis with accompanying facial eczema, a twenty per cent. noviform salve is employed. After removal of foreign substances from the cornea, it is used in three per cent. strength; in erosions of the cornea, a five or ten per cent. ointment is combined with ten per cent. atropine. Finally in bloody operations on the eye, as chalazion enucleation, in the form of powder.

Fluid Cultures of Lactic Acid Bacillus in Diabetes Mellitus.—These, says Henderson, (*Journal American Medical Association*) were used in four cases with the conclusion after careful observation, that there was no improvement either as to glycosuria or acidosis.

Valamine.—Lewinsohn, (*Munchener Med. Wochenschrift*, January 26, 1915), declares that valamine is the valerian ester of amylene hydrate and that it has a powerful hypnotic and sedative action, as well as being beneficial in cardiac disease.

Pituitary Extract in Uterine Bleeding.—Adolph Jacoby, (*Medical Record*, Feb. 6, 1915), reports on the hypodermic use of this agent as being a valuable procedure and uniformly successful in every case of menorrhagia, the duration and amount of the menstrual flow being diminished; in metrorrhagia there was diminished flow with longer intervals between bleedings. In cases of continued bleeding after operation, the bleeding ceased and the normal cycle was restored. In one case where it was used for threatened abortion the bleeding stopped. The author concludes that further

experience is necessary before conclusions as to the advisability of the use of pituitary extract in all such cases should be employed.

Coagulen.—Riedl states in the *Wiener Klinische Wochenschrift*, January 7, 1915, that coagulen is a preparation of the blood platelets of animals, which are supposed to contain thrombozyme, which unites with the thrombogen of the blood plasma after the latter has been discharged from the blood vessel and in the presence of calcium salts, causes the blood to clot. It appears as a yellow powder, soluble in water which can be sterilized without much injury to its efficiency. Locally it is used to check bleeding; it is also given hypodermically and intravenously especially in hemophilia. Pulmonary hemorrhage is favorably influenced.

Salicylic Acid Treatment of Wounds and Typhoid Fever.—Albert Wilson, (*British Medical Journal*, February 20, 1915), reports that the application of dry powdered salicylic acid to suppurating and infected wounds has given excellent results. It causes liquefaction of the scab or slough which disappear promptly, leaving a clean, bright red granulating surface to be followed by rapid healing. Offensive odors disappear within twenty-four hours. It causes no pain or irritation.

Radio-activity of the Waters at Hot Springs, Virginia.—J. C. Hemmeter and E. Zueblin report their studies on the radio-activity of these various springs in the (*Archives of Internal Medicine*, February, 1915), in which they state that they compare favorably with those of Hot Springs, Ark., and Yellowstone Park and those of various observations of European Springs. The swimming pool treatment is commended and stress laid on the fact that to exert a beneficial effect the waters should be consumed directly at the spring. Observations indicated that the air surrounding mineral springs contains radium emanations; and that this influence continued for long periods, must contribute to the therapeutic results in such conditions as gout, chronic and subacute rheumatism, metabolic diseases and certain skin affections.

RATIONAL ORGANOOTHERAPY

Conducted under the editorial direction of Dr. Henry R. Harrower.

The Cell's Altruistic Activities.—

More than eight years ago Harry Campbell of London contributed a series of papers to the *Lancet* (February and March, 1907), on "The Rôle of the Blood Plasma in Disease," in which will be found a most interesting consideration of the various factors which have to do with the phenomena of health and disease as it concerns the blood and especially its plasmic constituents. One of the most important of these points concerns the "altruistic function" of the cells of the body, and as it is intimately related to the basis upon which scientific organotherapy is established, it will doubtless be of interest to reiterate some of Campbell's ideas. In the summary of the fifth paper this writer expresses himself as follows: "The functions of the component cells of the organism may be considered from the egotistic and the altruistic standpoint, and it is possible for a cell to fail altruistically and yet possess a vigorous vitality, and thus, considered individually, be free of disease; a cell cannot be said to be actually diseased unless it degenerates and fails in vitality. Cell disease as thus defined rarely occurs spontaneously in the cell. Spontaneous disease in the *organism* is however, quite common and, when it occurs, generally results from altruistic failure in cell function, interfering with the normal harmonious interaction between the various parts of the body, and thus causing functional or even organic disease."

Hence we see that there must be a large class of conditions in which to all intents and purposes the various hormone-bearing organs are perfectly normal and yet are not doing their altruistic duty, by supplying their all-essential hormones to the plasma in reduced quantities. If the vital importance of these chemical messengers is always kept in mind in every case, the possible re-

lation of the various ductless glands to the conditions present is considered, it may be possible to augment in ever so slight a degree this altruistic function of the various cells and accomplish therapeutic results which could not be brought about so thoroughly and so quickly in any other way; in fact, too great emphasis cannot be laid upon the importance, from the point of view of treatment, of fixing the attention on the plasma.

Secretin in Infantile Summer Diarrheas.—

Among the important seasonal diseases which are of special significance at this time of the year, infantile diarrhea or "summer complaint" heads the list—at least upon the mortality statistics. The usual treatment of this disorder is really of a negative character since it is aimed at removing from the alimentary tract the offensive bacteria and the undigested food, as well, of course, as the highly toxic bodies produced by the action of the bacteria upon the food.

This is good treatment, for success cannot be attained without it; but it is none the less negative treatment for no positive effort is made to reestablish the digestive functions, the disturbance of which is the actual cause of the trouble. Herein will be found a consideration which is of no mean importance, and which, unfortunately, does not seem to have been given much prominence. The dietetic and eliminative treatment which is the orthodox method for the care of serious infantile diarrheas merely makes circumstances as favorable as possible for the body to reassert itself, and the addition of one positive factor will make a considerable difference to the outcome. This factor is the alimentary hormone secre-

tin, the function of which is to set in motion the digestive glands, and which may be given as a therapeutic agent to bring about more nearly normal conditions.

The writer first drew attention to this in a short paper entitled "Secretin in the Gastro-intestinal Diseases of Children" (*Pediatrics*, 1913, xxv, p. 430) from which the following paragraph may be quoted. "It cannot be denied that by far the best antiseptics for the reduction of toxic conditions in the intestines are its natural juices; secretin plays the most important part in their production, and its influence is not limited to the stomach or pancreas, but including these important organs, it also influences the production of bile and the intestinal juices from the pylorus to the ileum.

"The augmentation of the amount and activity of the normal digestive secretions is the most reasonable means of checking the intestinal fermentations so common in children; and it is well to remember that the administration of secretin preparations does not interfere with the hydrotherapeutic, and even the present day drug treatment, of these dangerous conditions."

These cases are always of a very serious character, and while good results are secured from the dietetic regulation and the administration of castor oil, calomel and other drugs, there is still a good deal of room for improvement, so let us augment our present measures by adding secretin, and from the experiences of the past three years, it may be said with considerable confidence that the infant mortality due to summer diarrheas will be still further reduced.

An Unusual Use for Pepsin.—While the use of pepsin for the treatment of gastric disorders is not as general as it used to be—physicians are beginning to realize that "it has a tendency to make the stomach lazy"—a phase of usefulness which is not very generally appreciated has been referred to by a German physician. Funke, writing in a recent issue of *Medizinische Klinik* (March 14, 1915), makes some interesting remarks regarding his use of artificial gastric juice in the treatment of gangrenous and suppurating wounds. He insists that healthy

granulation is brought about more rapidly under this method than in any other previously used form of treatment. He uses the standard physiologic HCl solution (.4%) with from 2 to 5 per cent. of pepsin dissolved in it. He finds that there is an advantage in adding to this solution a few drops of the well-known dimethyl indicator, since if the acid becomes neutralized there is no further digestive action and this is indicated by the absence of the pink color. Of course preparations of this character should be made from day to day and they must not be heated. It seems to have been proved that this pepsin-HCl solution is not sufficiently strong to digest sound tissue, but is none the less very effective in clearing off gangrenous wounds. When the wound is in an extremity he recommends immersing it in a bath of this solution, which is kept at body temperature, and where this is not possible irrigation is carried out for half an hour or more each day, and compresses soaked in this fluid are then applied every hour.

Rheumatism and the Internal Secretions.—No matter whether one considers rheumatism as a purely bacterial disease, as a metabolic disturbance or as an evidence of systemic toxemia, there can be no denying that many of the manifestations of this malady are closely related to disordered endocrinous function. Most internists who have considered this matter are now willing to admit that the ductless glands may be influenced as an incident in the progress of rheumatism—in fact, it is almost impossible to conceive of a serious metabolic disturbance without an associated internal secretory derangement.

Some writers, notably Levi and de Rothschild, assert that there is an internal secretory basis for several forms of rheumatism and believe that the thyroid is the gland that is principally at fault. Reports of autopsies on cases dying from or with severe rheumatism show that this organ is often diseased and they have had a number of encouraging experiences following the use of thyroid extract in rheumatism.

This subject receives further attention by the writer in another part of this issue

and in practice it is quite interesting to see how frequently the empirical use of thyroid extract as an adjuvant measure in the treatment is followed by a favorable turn.

Thyroid Extract in Certain Neuromuscular Disorders.—In children, and especially those of the "delicate" type, one occasionally meets cases in which bed-wetting, malnutrition and neuromuscular irritability are associated. Crawshaw (*Lancet*, May 30, 1914), reported two interesting cases in which excessive blinking of the eyelids was a disagreeable feature. He gave thyroid extract and syrup of calcium lactophosphate and strangely the blinking disappeared in a few days. The thyroid was discontinued for a few weeks and the blinking reappeared, only to disappear again after the medication was begun again. Another neuromuscular disorder in a girl of seven years was very interesting. The child was unable to stand, and had an extensive paresis of the muscles of the left arm and back, the condition being attributed to a serious attack of diphtheria some time before. One grain of thyroid was given three times a day (associated with a suitable dose of the syrup of calcium lactophosphate), and this was followed by a comparatively rapid recovery of the use of the muscles, the child regaining power to walk without assistance in five weeks and improving physically in a marked degree.

Adrenal Therapy in Thyroid Tachycardia.—It is not always easy to explain the exact action of an organotherapeutic remedy, but for this reason we must not set it aside, and refrain from its empiric use just because it is empiric. Phillips (*Lancet Clinic*, Nov. 7, 1914) suggests that the adrenals probably supply a secretion which is deficient in the diseased thyroid, but it seems more likely that the excessive physiologic activity of the thyroid in Graves's disease, increases the stimuli of the thyroid hormones with a corresponding reflex increase in adrenal activity which eventually results in their functional exhaustion. We know that many emotional conditions cause

increased activity of the adrenals, and we also know that in exophthalmic goiter, the patients are very often extremely emotional, and always highly nervous. Now, the principal manifestation of adrenal insufficiency is asthenia, and with thyroid cases, asthenia is an almost invariable accompaniment; hence the use of adrenal preparations not only tends to reduce what is missing (substitutive therapy), but it exerts its well-known action upon the heart and vessels (specific therapy), thus favoring the control of the circulatory symptoms which are so commonly associated with hyperthyroidism.

There is occasionally a seeming discrepancy between some of the reports of the physiologists and clinicians. An instance of this is the subject of the discussion. The thyroid and adrenals seem to work in harmony, and in a certain degree the adrenals are stimulated by the thyroid; hence with an overstimulated thyroid as in Graves's disease, one might not immediately conclude that adrenal therapy would be helpful. Yet Phillips has successfully used adrenalin in the treatment of enlarged thyroid. He gave from 15 to 40 drops of the standard 1:1000 solution by mouth three times a day, and reports results in these cases, all of which show considerable improvement. In his conclusion he states that this medication slows the heart and adds strength to its beat. It contracts arterioles of the thyroid and consequently reduces the amount of blood in the enlarged thyroid gland thereby diminishing its functional activity, and removes in a considerable degree the nervous phenomena which are also present.

PRACTICAL NOTES.

Nervous excitement, especially in primiparae at term, is frequently controlled by an injection of pituitary liquid. It must not be given till the os is fully dilated.

Urticaria.—Hypodermic or intramuscular injections of 8 minims of 1:1000 adrenalin solution have dissipated urticarial wheals and stopped the itching in less than half an hour.

For backward children with obvious physical defects thyroid extract or, occasionally, testicular substance, is of value. In cases where no physical defects are evident, pineal gland may be used.

For edema of the glottis or epiglottitis where life is in danger, adrenalin intravenously is worth trying. Dose 2 to 5 minims in saline solution for a child of three. Repeat in ten minutes if necessary.

GENERAL TOPICS

Cancer Study Meetings in Vermont.—The State of Vermont, like States in all parts of the continent, is becoming interested in the question of cancer, that is to say, under the auspices of the Vermont State Medical Society, backed by influential members of the laity, a propaganda of education with regard to the cancer problem from every standpoint, has been inaugurated. Dr. James Hamilton, secretary of the Society and Chairman of the committee for the purpose of conducting a special campaign for the education of the profession and laity as to cancer, was responsible for the organization of meetings in several towns in Vermont, with this object in view. The first meeting was held at Rutland on June 8th. In the morning Dr. William Seaman Bainbridge of New York, held a consulting and operating clinic at the Rutland hospital.

In the afternoon at Shrine Hall, Dr. Chas. Francis Dalton of Burlington, secretary of the Vermont State Board of Health, discussed the Vermont cancer situation.

Dr. W. Seaman Bainbridge dealt with some practical phases of the cancer problem and Dr. Jonathan M. Wainwright of Scranton, Pa., spoke of the field of the medical profession and the laity in the reduction of cancer mortality.

In the evening at the Rutland High School Assembly Hall, Drs. Dalton and Bainbridge further discussed certain aspects of the situation as regards cancer in Vermont. On June 9th the meeting was held at Burlington, consulting and operating clinics were held at Mary Fletcher Hospital, by Drs. Wainwright and Francis Carter Wood, director of Crocker Laboratory, Columbia University. In the course of the day and in the evening, the cancer problem in Vermont was fully discussed by Drs. Dalton, Wainwright and Carter Wood. On June 10, the meeting was held at St. Johnsbury when a similar program was gone through.

On June 11th, the meeting was at Montpelier when clinics were held and the question of

cancer in Vermont was thoroughly discussed by Drs. Dalton, Bainbridge and Wainwright.

The New York Geriatric Society.—The New York Geriatric Society was organized June 2nd, 1915 for the scientific study of senile conditions, the causes of ageing, the diseases of advanced life and the home and institutional care of the aged. This is the first society ever organized for this purpose. The officers are President, Robert Abrahams, M. D.; vice-president, Edward P. Swift, M. D.; secretary, I. L. Nascher, M. D., 103 W. 88th St. Reports, papers and reprints dealing with the subject are solicited. Meetings monthly, time and place to be announced in the medical journals. Those who have followed Dr. Nascher's work and efforts to secure greater attention for disease in old age will learn of the formation of this new society with much satisfaction. It will undoubtedly give valuable aid in extending investigation of senility and its pathology.

Rheumatism.—If we inquire, "What is Rheumatism?" states an editorial writer in the *Medical Press and Circular* (June 2, 1915), we may be sure of the same chilly and furtive dumbness as that which greeted Pontius Pilate when he made his famous demand for a definition of truth. The reply to such a question must take the form of the uninforming negative. We are beginning to realize what rheumatism is not; by a process of gradual exclusion we may hope some day to arrive at what it is, if indeed it be anything at all. "Si le bon Dieu n'existait point, il faudrait l'inventer" is a characteristically corroding saying of that incorrigible cynic who vainly sought to make Frederick the Great into a gentleman. If there were no generic positive to cover the agglomeration of negatives which we call rheumatism, it would be necessary to devise one. Rheumatism has nothing to do with acute rheumatism or rheumatic fever. It has nothing to do with what the French call "arthritisme," a term which, by a topsy-turvy process much better suited to the muddle-headed Briton than to the clear-headed Frenchman is used to describe all or any of the manifestations of rheumatism save only the arthritic, which are specifically excluded. Rheumatism has nothing whatever to do with uric acid, a senseless boggy badly designed by sad and salicylic herbivora to frighten the active and careless carnivora. Rheumatism has nothing to do with chorea, tonsillitis, subcutaneous nodules or erythema nodosum, all of which are said to have a real, but hitherto unexplained relationship to acute rheumatism. It may be that the only connection between them is the sinister power common to them all, of giving rise to endocarditis, a relationship which is not real, but apparent only. The power of producing a vicious cretin is common to many women who are unrelated to one another.

The word rheumatism is derived from *ῥέω* to flow. Shakespeare, and the writers of his time, always used it in the sense of a flux:

"You that did void your rheum upon my beard." The older pathologists distinguished rheuma into three species; that of the chest, catarrhus; that of the fauces, bronchus; and that of the nostrils, coryza. Here, indeed, is terminological muddle, through which it is quite impossible to discern the path by which the name first became concentrated on the joints, and thence passed via the muscles and the nerves to anything which was obscure and accompanied by pain. It will now never be divorced from the joints, for by a consensus of expert opinion "acute rheumatism" or "rheumatic fever" is so well established as to make a change impossible, even were it desirable. Dr. W. G. Grace, when asked why a particular kind of ball, the one which pitches on the batsman's "block" was called a " Yorker," replied, "Well, what else could you call it?" The same may be said of rheumatic fever; for though it would be easy to the pedant to suggest a more scientific name, the net result of his exercise would be to increase the existing chaos.

But we are advancing. Muscular rheumatism is developing into myalgia, tendinous rheumatism is now fibrositis, and obscure pains have become "neuritis." "Neuralgia" is no longer in favor; the common people have it. Even the "rheumatoids" do not advance in close formation; they are beginning to be discreet. Rheumatoid arthritis, formerly rheumatic gout, has ceased to be a disease; it is merely a symptom-complex, which owns causes so dissimilar as tuberculosis and oral sepsis.

The term "rheumatic gout" suggests that there is a difference between rheumatism and gout. Between acute rheumatism and gout, it is all difference; but between rheumatism of the vulgar sort and gout there is, we humbly suggest, no real difference. Save and except acute rheumatism and rheumatoid arthritis, all the tribes of rheumatism are in reality forms of gout. What, then, is gout? The term itself is derived from the French *goutte*—a drop; Latin, *gutta*; suggesting the idea of the dropping of a morbid material from the blood in, and around the joints. If the idea of dropping of morbid material be not restricted to the joints, the term is a good one. The drops may fall upon the muscles, the tendons and the nerves; they may even fall upon the eyes to blear them, and insinuate themselves through the skin to pimple it. Nothing, indeed, is sacred to these drops, not even the testicle. What we know of gout was taught us by Sydenham (1624-1689). In 1683, he published his "*Tractus de Podagra et Hydrops*," and until quite recently nothing of importance has been added to our knowledge since his time. "The more closely I have thought upon gout, the more I have referred it to indigestion or to the impaired concoctions of matters, both in the parts and the juices of the body." Thus spake the Master, and today we can do no better than paraphrase his saying by announcing that gout is due to "a vice of metabolism," a truly illuminating pronouncement, quite worthy of the nineteenth-century physicians who studied vitality in a test-tube. But the real kernel of Sydenham's classical and immortal description has been overlooked. "Add to this," he says, "that great eat-

ers are liable to gout, and of these the costive more especially." Here we have revealed to us the origin of those "drops of morbid material" which are at once so ubiquitous and so unsettling. "The costive more especially" points unmistakably to the seat of the vice of metabolism, which, in the light of these words, is a vice not so much of metabolism as of excretion. Nothing more liberally contributes to "the impaired concoctions of matters" than the undischarged bankruptcy of the colon; nothing more surely distills the drops of morbid material than the "vast mass of humours" engendered by intestinal stasis.

There have been two writers upon gout—Sydenham and Arbuthnot Lane. That the latter did not realize that he was more than half solving a problem which had baffled investigators for 200 years, detracts nothing from the value of his contribution. Some day there will arise a third writer who will still further clarify this jelly. And this he will do by means of an internal secretion. To induce him to emerge from his present obscurity we offer him the following considerations. Gout is seldom seen before puberty; in woman during her reproductive period it is very rare; and the smug and sibilant castrate is as little liable to beget tophi as he is to beget children.

BOOK NOTE.

Diseases of Bones and Joints.—By Leonard W. Ely, M. D., Associate Professor of Surgery, Leland Stanford Junior Univ., San Francisco, Cal. Sextodecimo: 220 pages, 94 illustrations. Surgery Publishing Co., New York. Price, Cloth, \$2.00.

The unusual interest now manifested by the profession in acute and chronic arthritis, as well as other forms of bone and joint diseases makes this book particularly timely.

Prof. Ely is particularly well equipped from experience to present an authoritative work, having specialized in this particular branch of surgery for years.

This book is intended primarily for the general practitioner, but instead of furnishing that long suffering and very important person with a mass of details, and with many methods of treatment from which he may choose, the book lays down broad general principles, with the evidence upon which they are based, and then shows how these principles may be applied.

In a brief terse way, it presents the anatomy, physiology and pathology of bones and joints; acute and chronic arthritis of various types, ankylosis, diseases of the shafts, acute osteomyelitis, chronic inflammation in the bone shafts, new growths in bone, etc.

The profuse photomicrographs with other illustrations aid materially in placing up to the eye of the reader the contents of the book and the marginal side-heads, printed in contrasting colors, permits of ready reference.

It is a book which will be much appreciated by the general practitioner and can be read with the assurance that it presents valuable instructions from an authoritative source upon a subject where much light is needed.

American Medicine

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Cancer—Preventable and Curable.—It was a happy thought of the Cancer Commission of Pennsylvania to enlist the aid of the entire press of the country in the effort to arouse interest in a question that is so important to the human family. Judging from evidence on every side the medical as well as lay press have responded enthusiastically to the call for cooperation, and there cannot be the slightest doubt that infinite good will result from the enormous amount of publicity given to important phases of the cancer question. It is needless to state that AMERICAN MEDICINE welcomed the opportunity to lend its humble aid to this great and good movement, and much satisfaction is felt by those charged with its direction, that a series of papers of such conspicuous merit can be given to our readers in this issue. In every way, these articles make a creditable addition to the splendid literature of the subject.

It is evident from the work, not only of the Pennsylvania Commission, but all others who are giving their time, thought and labor to the propaganda, that the most promising way of overcoming this foe of mankind is to forestall its attack and prevent its entrenchment in the body. Two conclusions stand out from the study and investigation so many of the world's greatest minds have been devoting to cancer, and that is there

are certain well defined means of prevention and one all-important consideration of treatment. Lack of space precludes any extensive discussion of these matters, but we would feel remiss in giving any space whatsoever to this subject if we failed to reiterate these essential details of successful prophylaxis and treatment.

Of course we are only repeating what has been said many times this month and much better than we can hope to say it. But these things, like Dr. Bainbridge's "Articles of Faith" in respect to cancer, cannot be repeated too often.

Thus all our knowledge in regard to cancer teaches us that the essential details in the prevention of this disease are "the elimination of all sources of chronic irritation, especially in regions known to be especially susceptible to cancer," (Bainbridge); the removal of all benign neoplasms such as warts, moles, nevi, etc., particularly in patients near to or over forty years of age; and the avoidance of all forms of chronic or continued trauma to tissues or in areas in which cancer is especially liable to develop. The known part which the foregoing conditions play in the causation of cancer certainly invests their elimination, removal and avoidance with the utmost importance.

In regard to treatment the paramount consideration has been proven very conclusively to be the radical removal of every suspicious growth at the earliest possible moment. To be sure, surgery does not cure every case of malignancy, but it has been clearly shown that the earlier operative procedures are employed, the greater the promise of recovery. Speaking of the dependence that may be placed on surgical treatment some one has neatly said that in the great majority of instances "when surgery fails to cure cancer it is not due to the failure of surgery, but the failure to employ early surgery."

With these facts so generally conceded, it is apparent that the need of the hour is education. How universally this has been recognized is well evinced by the way the various societies, commissions and institutions throughout the country have concentrated their efforts in this direction; with consummate skill all available agencies have been employed to spread broadcast the known facts concerning cancer, especially in regard to causative factors, early detection, the importance of early surgical treatment, and the futility of irresponsible and untried measures. The lay press have responded nobly, philanthropic individuals have come forward with financial assistance, the intelligent laity have cheerfully helped in spreading the truth, and as was to be expected, the medical profession have gone on to "the firing line" and brought into action every energy that could aid in defending humanity against this ruthless enemy. Throughout various sections of the country public meetings have been held for the public, with illustrated lectures on cancer by the leading physicians of the country. In this way, a large portion of the people have been reached more effectually than

would have been possible in any other manner and taught the importance of prevention, early diagnosis and prompt surgical treatment. It is obvious that this whole campaign has been splendidly conceived—as well as admirably planned and carried out—by those who have awakened to the situation and realized the urgent need of concerted action. Far be it from us to be fulsome in our appreciation but when we consider what has been done, and realize the fine, unselfish purpose back of it all, we cannot keep from expressing our sincere admiration for everyone who has contributed in any way to this great humanitarian movement.

Unquestionably some time must elapse before the full benefits can be expected to appear, but they are sure to come, and we are confident that the faithful efforts now being put forth so generously and earnestly without thought of personal gain or reward, mean at no distant day a very notable decrease in the occurrence of cancer.

The Scandal of Medical Expert Testimony.—The Thaw case has cast its ugly shadow over our law courts for the past nine years, but great as the discredit it has brought to law and justice, it is medical expert testimony that has suffered most. For a good many years the medical expert has been losing caste, and it has long been a common belief in legal circles not only that medical witnesses were available in an inexhaustible supply but that the evidence any medical man would give on any subject depended entirely on what was wanted by the side engaging him first. While this conclusion is most unfair and there are a great many physicians who have refused

to give expert testimony on any given phase of a question unless they were convinced of the correctness and propriety of their views, it is a fact which we must regretfully admit, that no matter how bizarre and ridiculous a medical conclusion is called for in building up a case in court, there are always plenty of medical men who can be induced to support it. As a consequence, medical expert testimony has practically resolved itself down to the custom of one side calling as large and brilliant a galaxy of doctors as can be afforded to testify that such and such a thing *is* so, and the other calling as many more as it possibly can to testify that it *is not*. Under such circumstances is it any wonder that medical testimony has fallen into such ill repute, or that judges and juries have come to question its value and accord it so little attention in reaching their verdicts?

The whole subject has been receiving careful consideration for some time by leaders in both the legal and medical professions, for it is realized that medical expert testimony, purged of its evils, can be made to render great and substantial service in the execution of our laws, the determination of right, and the dispensation of justice. While from the initial trial of Thaw the abuses of medical expert testimony have been so evident and flagrant as to disgust those who hate to see our honorable institutions prostituted by wealth, it was the travesty on scientific medicine given at Thaw's last trial that has aroused the indignation of those interested in the problem to a point that promises at last some definite action toward placing medical expert testimony on a basis that will enable it to accomplish its rightful purposes and free it from the suspicion and disrespect it now receives.

Medical expert testimony on many occasions has exposed itself—or rather medical experts have—to much criticism, but it is doubtful if a worse example of the lengths to which a partisan medical expert will go, has ever been presented in open court, than was provided by one of the leading medical witnesses for the State. Prejudice, personal feeling, and partisanship were plainly shown, with such indefinitely expressed conclusions and confused explanations that the presiding judge was obliged to confess his inability to understand what the learned expert was really trying to testify to. The climax was reached when this expert solemnly declared, as one of the reasons for considering Thaw a hopeless paranoiac, his firm belief that the defendant had tried to hypnotize him (the witness) while on the stand! The ridiculous character of such a conclusion was not calculated to increase respect for the one voicing it or augment confidence in his ability as an alienist. At any rate, it left no room for surprise at certain caustic comments of the judge concerning medical expert testimony in general and his frank disavowal of its value as an aid to him in reaching a proper decision in the case before him.

It is a source of great satisfaction to those who appreciate the importance of this question that a bill has been passed by the New York State Legislature and approved by the Governor, which provides, in cases presenting medico-legal problems, for the appointment by the court of three disinterested physicians of recognized skill and experience who shall serve as medical experts and receive from the public funds such sums as the judge appointing them may decide to be right and proper.

Some objection has been offered to this plan, but there is so much to be said in its

favor that it deserves a full and comprehensive trial before any attempt is made to revise it or tinker with it in any way. It is certainly a step in the right direction and as Judge A. T. Clearwater says in an open letter to Dr. John A. Wyeth (*Med. Record*, May 8, 1915) at last something has been accomplished. This earnest effort to correct a situation that has become intolerable should be given the support of all interested in medico-legal progress. Experience will doubtless indicate ways of still further assuring disinterested medical expert opinion, but it would seem that the one great step forward is to provide for the presentation of expert evidence that is not subject to the influence, hypnotic or otherwise, of market conditions.

The Revival of Antisepsis.—For the past two decades our masters of surgery have strenuously taught that antiseptics should have little if any place in the treatment of wounds, and that scrupulous cleanliness as embodied in the aseptic method is all sufficient. The chief objection urged against the use of the more powerful antiseptics has been their devitalizing action upon the cells and their interference with the resisting powers of the tissues. In the face of this strong accusation it is not surprising that the introduction of antiseptics into wounds has been viewed by many as an antiquated and useless relic of Listerism.

In the clinics of the great masters the marvelous operative achievements of the present day have been ascribed in large part to the rigid application of aseptic methods, so that the hospital surgeon who implicitly followed their teachings, when constrained to perform his work under conditions that rendered asepsis impossible, has often been

greatly embarrassed. Force of circumstances, however, in not a few instances have compelled him to resort to antiseptics even though his aseptic soul rebelled against their use.

The present European war is a striking example of how circumstances may alter cases. Many of the great surgeons of the warring nations, when transferred from the aseptic environment of their operating theatres to the uncleanly and even filthy conditions prevailing in the field hospitals, from the orderly routine of their work at home to the confusion and turmoil of the battlefield, must have suffered a twinge of their surgical conscience when they observed the futility of attempting a rigid aseptic technic. One of the most valuable lessons taught by this war—perhaps the most valuable—is the realization that, after all, there is some good in antiseptics. However great the prejudice against their use, the surgeon has learned that they constitute our only reliable local agents against infection of wounds inflicted on the battlefield. Other surgeons who have had a large experience with accident cases, as in railroad wrecks, mines or lumber camps away from the larger centres, could have told the same story, but it required a tremendous war, like the present one, to drive home the lesson.

Surgical reports from the war zone give us only a faint conception of existing conditions, horrible as they seem. Exhausted, both mentally and physically, by constant vigilance in the trenches, their clothing begrimed with dirt and filth, is it any wonder that the men wounded under such circumstances should present the most favorable conditions for infection? On the one hand we have greatly reduced resisting power; on the other, the germ ever present and ready for invasion. The nature of

the wounds inflicted by shrapnel shells, hand grenades, etc., so largely used in this conflict, have materially contributed to the risk of infection, the tissues being bruised and lacerated by fragments of these projectiles.

According to the reports there has been an unusually large number of cases of tetanus and gas phlegmon, both of them equally fatal in their outcome.

Thus it will be seen that surgeons have had unprecedented opportunities for observing and treating wound infections and of studying the effect of antiseptics—not in the test tube of the laboratory worker but in the light of practical experience. And thus investigated antiseptics have made good. In spite of the theoretical teaching that they destroy the phagocytes and lower the resisting power of the tissues, even the most powerful germicides have been employed in strong concentration, and *mirabile dictu*, the wounds have healed.

The accumulated observations on the antiseptic treatment of wounds during this war cannot fail to exert a profound influence upon the surgery of the future. They will not tend to lessen the value of aseptic methods in general operative work where they can be carried out with precision, but for emergency and accident surgery, where asepsis is unattainable or imperfect, where hospital facilities are not accessible, the rank and file of the profession will again be justified in placing confidence in the much abused, much discredited, but so conspicuously vindicated and rehabilitated antiseptics.

The Ethics of Pituitary in Labor.—

Not so long ago a physician in a prominent hospital where the obstetrical patronage is

large was asked why pituitary was so rarely used there in suitable cases. The answer was remarkable: "There would be practically no forcep cases if we used it, and so we would have little or no material for demonstration purposes." The name of the speaker, as well as of the institution referred to, are not for publication, but a few remarks on the subject thus accidentally brought to light may not be amiss.

Medicine is continually advancing. The breadth and utility of the service rendered in hospitals and by the physician is enlarged from year to year by the advancement made in research and technic. It is also well known, however, that at the same time, the medical profession is reducing its opportunities for work or profit by making away with disease.

Not least among the notable advances of the past ten years is the introduction into obstetrical practice of preparations of the active principle of the posterior lobe of the pituitary body, credit for which is due to W. Blair Bell of the Liverpool General Hospital. The influence of this substance upon patients with uterine inertia is nothing short of wonderful, and in recounting its virtues a prominent New York specialist recently asserted that its administration had reduced the need for forceps fully eighty percent. As a result of this there would undoubtedly be a lack of "teaching material" or "demonstration cases"; but we cannot believe that the position stated above is held by more than a fraction of the profession, for it is wrong, absolutely wrong. Every individual, whether the well to do patient or the charity case, is entitled to all the benefits of progress in medicine, and one of these benefits, the value of which none can deny, comes from the skillful use of pituitary in protracted labor. Some day, and

not so far in the future either, it may be malpractice to omit the use of this method in suitable cases, and practitioners in our lying-in-hospitals will be no more exempt than those in private practice.

Strangely enough another phase of the same subject recently came under discussion: A physician practicing in a small village who was telling some of his experiences was asked why he had not used pituitary in a certain case to which he had alluded. His answer was: "I have used pituitrin in a case of postpartum hemorrhage, but a \$10 bill looks too good these days. Forceps delivery, you know, means \$25 instead of \$15!" It hardly seems credible that such a circumstance should hinder the use of so rational a measure. The dangers of forceps delivery, both to mother and child, altogether overshadow the rare and comparatively negligible inconvenience which may follow an injection of pituitary when the os is fully dilated. The professional prestige and profit resulting from work well done, as well as the satisfaction of having done the best one could, should more than replace many a \$10 bill; and, in the end, any minor pecuniary sacrifice that the doctor may be called upon to make in order to give the best service, will invariably be a good investment.

Pituitary in obstetrical practice, as well as in a strikingly large number of other phases of therapeutics, has come to stay and is of unquestioned value, so let us not permit ourselves to be classed with the "antis"—or the money grabbers.

The Broadening Scope of Vaccine Therapy.—When, some ten years ago, Sir Almroth Wright announced the results of his study of the relation of bacterial infection to immunity, and established his theory of opsonins on a scientific basis, it

was prophesied that vaccine therapy had a far greater future than the scientific world at that time believed. Much criticism was heaped upon those who permitted their justifiable enthusiasm to flavor their communications on various phases of the subject. Of course vaccine therapy was ridiculed by many physicians and even certain members of the laity had to join in, for George Bernard Shaw in his satire "The Doctor's Dilemma" made a good deal of fun of "Sir Colenso Ridgeon" for advocating this new method of treatment. Shavians will remember that this imaginary gentleman was made to say that the opsonins were "what you butter the disease germs with to make your white blood corpuscles eat them."

In spite of this, vaccine therapy has been wonderfully broadened, and the work of the past decade has revolutionized our conceptions of immunity and put an entirely new aspect upon the therapeutics of many infective conditions. No right-minded physician will deny the fundamental correctness of Wright's "theory" or the thousands of remarkably good clinical results obtained from the use of stock and autogenous vaccines in widely differing infections.

Probably the greatest of all the steps toward progress that have been made possible by the application of Wright's idea lies not in therapeutics but in prophylaxis. The splendid results from antityphoid inoculation among the armies now at war testify to the effectiveness of this epoch-making procedure.

It is not possible here to enumerate the many advances made in this profitable branch of therapeutics; but it is interesting to see the way in which vaccine therapy is being extended. During the past few months several important reports have been published, chief among which is the announcement of Klotz's discovery of the

typhus bacillus and the preparation from it of a vaccine which we do not doubt will be of much value in the control of the epidemic of typhus fever now raging in several of the southeastern states of Europe.

Two other advances in vaccine therapy have come as a result of the European war—the use by the British of mixed stock vaccines in the prophylaxis and treatment of severe mixed infections following wounds and, more recently, the production by French bacteriologists (*Presse médicale*, Dec. 31, 1914) of a polyvalent stock vaccine from cultures of the *bacillus perforans* for the treatment of the numerous cases of gas gangrene that have originated in the trench warfare in northern France. This new treatment offers a very promising outlook for the control of a disease which is extremely difficult to treat, and, incidentally, is another proof of the value of polyvalent stock vaccines over the much more difficult to obtain autogenous preparations.

Still another interesting item will be found in a recent special journal (*Journal of Cutaneous Diseases*, March, 1915). A new vaccine is now recommended for the treatment of ringworm and from all accounts the results following its use have been most gratifying. This is of more than ordinary interest since ringworm is not essentially a bacterial disease. The reports show that suitably prepared killed cultures of the fungus causing ringworm may be injected with the expectation of increasing the resistance to it.

The profession as a whole have taken very kindly to vaccine therapy and have to thank it for many victories over infections and infectious diseases. It is unfortunate, however, that too much has been made by self-centered individuals of the advantages of autogenous vaccines as compared with the more easily and quickly obtained stock preparations. It appears that the position of these writers will have to be modified and the profession be "permitted" to use stock

vaccines in the majority of cases suitable for this form of treatment, having recourse to the specially prepared bacterial suspensions in the occasional stubborn, chronic cases which do not respond satisfactorily to a course of injections of stock preparations.

Federal Thrift and Charity.—In an editorial in the *Journal of the American Medical Association*, (April 17, 1915), we find the remarkable statement that a nostrum sold under false and fraudulent claims was recently analyzed by the federal chemists and found, according to the report made to the government to "possess no medicinal properties whatever," as a consequence of which it was declared misbranded. The product was straightway condemned and forfeited and ordered sold by the United States marshal. The question arises to whom, and for what purposes?

In another instance three barrels of a misbranded sherry wine was declared forfeited because it was but an imitation prepared from pomace and glucose, and preserved with 1-10 of 1 per cent. of sodium benzoate. The court nevertheless ordered the United States marshal to remove the misleading labels, mark it "Imitation Wine Preserved," and then to distribute it "to certain charitable institutions." If these products were fraudulent in accordance with the Food and Drugs Act and, therefore, unfit for consumption through trade channels, what authority was there for disposing of them in the first instance for a consideration, or in the second, for sending the stuff to certain charitable institutions to be consumed by presumable invalids? Is not the United States, through its court officials as guilty of fraud or deceit as the nostrum vendor? It is acts such as these that cast reproach on governmental officials and expose the Food and Drug laws to criticism and attack.



A Tribute to Dr. Dawbarn.—The death of Dr. R. H. M. Dawbarn removes at the very height of his career, one of the best known and most capable surgeons in America. Kind, lovable and possessed of a striking personality, Dr. Dawbarn was deeply admired by those who were fortunate in knowing him as friend, physician, instructor or colleague.

For eighteen years of his practice he conducted a private school for surgeons who desired to pass the examination for the Army and Navy Medical Services. It is said that nearly half of those now in the service attended his school. In 1885 he was appointed instructor in minor surgery at the College of Physicians and Surgeons and stayed there for two years, when he became Professor of Surgery and Anatomy at the New York Polyclinic School.

Dr. Dawbarn wrote extensively on surgical subjects. He was the author of "Aid to Materia Medica" and the "Treatment of Certain Malignant Growths by Excision of External Carotids," and a frequent contributor to many of the country's leading medical journals.

In 1902 the Philadelphia Academy of Medicine gave him the Samuel E. Gross prize of \$1,000 for the best original work in surgery during the previous six years.

The following tribute is by one who knew him well:

About Robert H. M. Dawbarn there is so much to say and yet so little that is necessary to be said. As one physician put it "If any work on surgery was submitted to me and it did not mention Dawbarn's name at least three times, then I would consider that work incomplete. That is obituary enough for any man."

Dawbarn certainly died in the harness, if anyone ever did. Within a few days of his death he successfully performed an elab-

orate and difficult operation involving the triangles of the neck. Less than a week before his death he wrote me a letter in which the penmanship was as firm and decisive as it had ever been, and strange to say the subject matter of that letter was in part a description of a death caused by fear: fear pure and simple. The mere list of his writings would cover more space than is allotted for these remarks. Many of the surgical expedients which his fertile brain suggested will be in use long after our day. And, to mention but a single one, the cording of the extremities as a life saving measure in internal hemorrhages will, by its value as an emergency procedure, go far to make good the work "he being dead yet speaketh."

Two strange men have recently passed away. Men that were out of the common and paid the price of being so. The first, Elbert Hubbard, left me this sentiment: "You may think that a man is altogether contemptible, but, if you really knew the circumstances of his environment, you would see plainly that he is doing the best he can. And, furthermore, you might, in all fairness, admit that he was doing better than you could do. You might even be broadminded enough to allow that most people, except yourself perhaps, are doing their best, anyway."

Robert Dawbarn left me a poem by Helen Churchill Lambert on which he has written the word "fine." This little verse called Shipwreck, casts a mellow light on Dawbarn's character, for as a man thinketh so is he.

SHIPWRECK.

My heart and I drift on a restless sea,
Both anchor and rudder are torn from me,
Tossed, buffeted, drenched, by the wave and
foam
My heart seeks a haven it may call "Home."



R. H. M. DAWBARN, M. D.

But heart of mine, Fate wills it otherwise,
The planet, which rules o'er thy destinies,
Has left its fixed orbit and plunging down,
Wanders, lost in infinite space, alone.

DOUGLAS H. STEWART, M. D.,
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Dr. Goldwater Resigns.—The resignation of Dr. Goldwater as Commissioner of Health of the City of New York is a genuine loss to the community. New York has been exceedingly fortunate in the men who have been in charge of the administration of its health affairs during the past two decades, but of all those who have served as Health Commissioner no one has



enjoyed in greater measure the good will, confidence and support of both the laity and the medical profession, than Dr. Goldwater. From the first his special qualifications for the exacting duties of the position were recognized, and much satisfaction was felt at the selection of a man so well equipped in every way to safeguard the health interests of New York. Realizing his ability not only as a trained physician but especially as an executive, the high state of efficiency which the health department has attained under his direction has occasioned no surprise. Indeed, so much was expected from Dr. Goldwater that his achievements have not received anywhere near the attention and enthusiastic approval they have deserved. They have been looked on as a matter of course. Accomplished by a man of whom less was anticipated, the many innovations and improvements he has been responsible for, would have been considered remarkable and lauded to the skies. Then again, Dr. Goldwater is a modest man. He has sought no personal credit or advertisement, but has been content to do his work and let the results speak for themselves. As a consequence, a large part of the many things he has accomplished in behalf of the people and in placing the health of New York City on a secure basis, is unknown to all but a few who have had a chance to keep track of his work. Those who do know how earnestly and efficiently he has

fulfilled his duties as the Commissioner of Health of the largest city of the Western Hemisphere, can say in all sincerity and truth that New York is losing one of the most capable and faithful health commissioners it has ever had. He has filled the position with fidelity, discretion and diligence, and though fearless in his undertakings, has never failed to enforce his views with tact and common sense. It is a source of deep regret that Dr. Goldwater is leaving the public service, for it is going to be very difficult to find a successor who can bring to this trying position such broad experience in public medicine together with such conspicuous talents as an executive.

In relinquishing his office, Dr. Goldwater may carry with him not only his own knowledge of the careful, painstaking way he has performed his duties, but in addition, the hearty approbation and gratitude of his colleagues and medical friends who though they expected much, have every reason to feel proud of the record he leaves behind him.

Death of a Noted Pathologist.—Many will learn with sorrow that Dr. Francis Delafield passed away on July 17, as a



result of an apoplectic seizure a few days before. Although seventy-four years old, he had enjoyed good health and kept actively at work up to his last illness. According to *The New York Medical Journal*, Dr. Delafield was born in New York in 1841, graduated from Yale University and from the College of Physi-

cians and Surgeons of New York, of which his father, Dr. Edward Delafield, was president, and later studied in London, Berlin, and Paris, devoting particular attention to pathology. On his return to New York he became surgeon to the New York Eye and Ear Infirmary, pathologist to Roosevelt Hospital, physician and later consulting physician to Bellevue, St. Luke's, and Roosevelt Hospitals, adjunct professor, professor, and professor emeritus of pathology

and of the practice of medicine in the College of Physicians and Surgeons. He wrote much and ably on the subject in which he was particularly interested, his most important books being *A Handbook of Post Mortem Examinations and Morbid Anatomy*, *A Manual of Physical Diagnosis*, *Studies in Pathological Anatomy*, *Diseases of the Kidneys*, and a *Handbook of Pathological Anatomy and Histology*, the latter being prepared in collaboration with Dr. T. Mitchell Prudden. Doctor Delafield received the honorary degree of LL. D. from Yale University and Columbia. He was a member of the Century, the Yale, and other clubs. He was the first president of the Association of American Physicians and Pathologists, and was a member of various local, State, and National medical societies. Doctor Delafield was most successful both as an investigator and as an author, and as the *Journal* so well says, occupied a high place in the esteem of his fellow practitioners as well as of the laity. Few American text-books on pathology have enjoyed wider popularity than his work in collaboration with Dr. Prudden, and it is through this book that Dr. Delafield was known to thousands of American physicians. He leaves a widow, a son, and two daughters.

Empiricism in Medicine.—In a recent issue of one of our esteemed contemporaries a statement appears to the effect that "*Empiricism has no place in modern therapeutics*," and we would like to take exception to it.

It is probably true if one considers the term "empiricism" as implying quackery pure and simple, that few will deny the correctness of this writer's dictum, but if we consult the dictionary we will find that the most generally accepted definition of the word "empiric" is: "Relating to or based on experience or observation." A second choice is given, which is as follows: "Given to or skilled in experiments; relying on or guided by observation of facts rather than by accepted principles; generalizing hastily from limited facts, hence charlatanic." (*Standard Dictionary*).

Obviously there is a good deal of difference between these two definitions, and if

the first one is to be taken, surely the physician who shapes his therapeutic actions in the mould of experience or observation, is quite the opposite of the one who "generalizes hastily from limited facts."

Among the ancient Greeks whose position in the arts and sciences was second to none, there were three schools or sects in medicine: The empirics, who insisted that experimentation was the principal requisite, as distinguished from the methodists who relied purely upon theory, and the dogmatists, who took middle ground. If it had been our fortune to have lived in those days we feel confident that we would have selected our family physician from the ranks of the empirics.

In more modern times experiment and experience have certainly been looked upon as essential to success in medicine, and especially that part of it which concerns therapeutics. It would seem, therefore, that the criticism of our contemporary is really one of verbal construction, rather than of technical inaccuracy. If he implies that the empiric is an unscientific physician who merely experiments, then such have no proper place in the vanguard of modern medicine, but if the word is given its correct meaning then we should be thankful that empiricism enables one to introduce into medicine so many advantageous procedures and remedies which do not metamorphose from the empiric to the scientific until they have been used clinically for some time. The empirical nature of nearly all of our best methods and remedies in medical treatment has been often recognized, and even today it is surprising to what an extent we still depend upon what can be credited to empiricism, and this alone. Humanity would have carried a heavier burden of pain and suffering than it has during the last half century but for the practical information born of observation and experience. This recognition of the rôle of empiricism in alleviating human ills is not intended to disparage scientific medicine nor the laudable desire to place all medical knowledge on a sound scientific basis. But the thing we would emphasize is that to wait invariably until a measure or remedy is scientifically established before taking advantage of the benefits experience and observations have taught us to expect from its use, is

not only unjust to our patients, but a course opposed to the humanitarian principles of medical practice.

Christian Science Healers Refused License in New York.—The New York Assembly recently rejected, by a vote of 46 for, to 79 against, a bill introduced by Assemblyman Thorn, designed to exempt Christian Science healers from the medical practice act which requires the examining and licensing of physicians to practice medicine within the state. A similar bill passed by both the Senate and Assembly last year was vetoed by Governor Glynn.

It seems strange after the exposure of the utter ignorance of this cult, and the discrediting of their ridiculous claims to cure disease that so many supposedly informed men should be found who would take them seriously. It is no less incomprehensible that the frequent exposure of their wanton assault upon the intelligence of the people, as shown in innumerable actions in the courts should pass unheeded by the law makers of the state, and that men could be found willing to vote to allow persons without the slightest knowledge of disease to prey upon obsessed adults and helpless innocent children. And strangest of all few of those thus voting would allow any but the most skilled physicians in the sick room of members of their own family! Surely there must be large profits in the irregular treatment of disease to cause the Christian Scientists and quacks generally to use such persistent endeavors to be allowed to practice medicine.

Contrary to general opinion the regular medical profession have no objection to state recognition of the new schools or cults. The only demand is that the requirements to obtain a license to practice shall be as stringent and comprehensively strict—in other words offer as definite protection to the people—as the laws enforced against regular practitioners.

Reactions of the Normal Organism on the Environment.—In contrasting an ordinary developing child with one which is "backward," says Brock, in a recent issue

of the *Edinburgh Medical Journal*, one will often notice that it is the initiative that is primarily and fundamentally lacking in the latter; it is not so much that the backward child has no brain as that it objects to using it. The normal and healthy child is constantly, of his own volition, seeking out new problems, attempting zealously to master them, while the defective child can be induced to do so only by extremely tactful handling and plodding perseverance on the part of parent or teacher. Failing intelligently directed environmental stimulus, it will remain all of its life in a stage of infancy, notwithstanding it is possessed of capabilities of very much further if perhaps not complete development.

Emetine in Amebiasis.—An address on Emetine in Amebiasis was delivered at the recent Aberdeen meeting of the British Medical Association by Professor Llewellyn Phillips, of Cairo, and published in the *Journal of Tropical Medicine and Hygiene*, August 15, 1914. Professor Phillips made a strong plea for a much more prolonged use of emetine than has been customary, three weeks or more; and suggests that it should be combined with small doses of a suitable aperient. Emetine readily destroys the amebic or active stages of the parasite, but has no effect on the cysts; hence the patient remains a carrier and a source of danger to others, while he, himself, is liable to complications and relapses. The following line of treatment is advised by Phillips; hypodermic injection of emetine for ten days or longer, succeeded by its oral administration. This is to be followed by subsequent courses of injections, at increasing intervals, combined with frequent doses of calomel and thymol. No case is cured until repeated examinations fail to disclose *entameba histolytica* in the stools.

Death Rate and Intelligence.—If the principles of sanitation as they are understood today were put into practice, the average life expectancy would increase to sixty-five within fifteen years. The death rate today can be determined by the measure of intelligence prevailing in any considerable area or section. Victor C. Vaughn.



**THE CURE OF THE "INCURABLE,"
A PLEA FOR MORE ACCURATE
DIAGNOSIS AND MORE CARE-
FUL PROGNOSIS IN MALIG-
NANT DISEASE.**

BY

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There is perhaps no disease in which the diagnosis is fraught with so many snares, and in which the prognosis may lead to so many pitfalls, as cancer. Unfortunately, the diagnosis is often attained by no absolutely reliable sign or symptom, or set of signs or symptoms. The study of the clinical course of the disease and a knowledge of the difficulties involved in making a reliable diagnosis must emphasize the importance of giving the patient the benefit of the doubt as to the prognosis, on the positive as well as on the negative side. While the so-called classic symptoms of malignancy are often present, there may be one or all absent in the presence of a tumor which is plainly and perhaps virulently malignant, as determined by careful microscopical examination. It is equally certain that these symptoms may be present to a marked degree coincidentally with the existence of a tumor or tumors the non-malignant nature of which may be established by the complete disappearance of the

neoplasm under treatment directed toward causative factors in no way involving the existence of a malignant process.

It is clear then that no symptoms or set of symptoms should be relied upon invariably in making a diagnosis of cancer. Unless the clinical picture is absolutely convincing, especially in cases involving extensive surgery, the microscopical should always be employed to reinforce the clinical diagnosis, if it is at all feasible to do so. In the presence of a clear-cut clinical picture of malignancy, involving radical surgery, a negative microscopic report should not be accepted as final. Every surgeon whose experience with cancer is extensive, has doubtless had repeated evidence that malignancy may be discovered in some instances by the aid of the microscope only after many sections have been examined.

Inasmuch as there is at present no reliable serodiagnostics test for cancer, there must be brought to bear upon every case in which there is room for doubt a careful correlation of clinical and laboratory methods of diagnosis.

The fact that about eight to nine per cent. of patients operated upon for cancer, or sent to the mortuary as dead of the disease, in a certain set of hospitals employing modern methods during a given period of time,¹ were not victims of this disease, is

¹ Bainbridge, "The Cancer Problem," 1914, pp. 195-196.

very significant of the need of more accurate diagnosis, and more careful prognosis. The findings in these hospitals could, without doubt, be paralleled in many others, and in the private practice.

The converse of this state of affairs is doubtless likewise true, though it is not so easy to determine the number of cases of cancer which were originally diagnosed as nonmalignant affections of one kind or another. Such cases, as a rule, eventually come to the surgeon at the stage of the disease when mistake is improbable or impossible, and the errors of the previous diagnostician are not recorded.

Mistakes in diagnosis of either kind may be very disastrous in their outcome, and it is only by the careful weighing of the evidence in each case that they may be avoided. Indifference to the gravity of an affection which bears semblance to cancer is extremely reprehensible, whether the patient be the humblest occupant of the hospital ward or the proudest "lord of the castle." On the other hand, a reckless tendency to be on the safe side and to treat as cancer every harmless lump and bump may be far-reaching in its evil consequences.

The difficulties which beset the physician or surgeon as diagnostician in the matter of determining the question of malignancy or nonmalignancy, are not all that he is liable to encounter. As prognosticator he is prone to carry his patients too far into the high places of hope by treating as trivial matters which are of grave import; or he is apt to plunge them too deeply into the slough of despond by pronouncing as hopeless conditions those which may be curable, or at least amenable to palliation.

From the point of view of diagnosis, treatment, and prognosis it may be con-

venient to classify cases of cancer under the following heads: (1) Removable, hence curable; (2) *seemingly* irremovable and incurable; (3) irremovable yet operable and curable; (4) irremovable and incurable, yet operable; (5) inoperable, irremovable, and incurable. The study of a few cases of each category would serve to convince the most sanguine investigator that there is an urgent call for more accurate diagnosis and more careful prognosis, not only with regard to the existence of malignancy, but as to the stage to which it has developed. The following cases are presented as illustrations of some of the diagnostic and prognostic stumbling blocks which may be encountered.



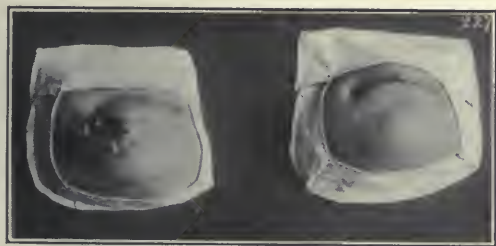
CASE 1. Fig. 1.

Case 1. F., male, 40 years of age. Cigar salesman, and an inveterate smoker. Consulted me November 22, 1913, for the condition of the lower lip shown in Fig. 1. Photograph of a wax cast of the condition. Two or three years before he had had several small sores on his lip, which his physician had cleared up by the use of caustics. In the present instance he had previously consulted two other physicians, one of whom pronounced it cancer and advised immediate removal of the growth, the other, a surgeon, urged excision of the lip and glands of the neck. Upon examination I found ulceration of the mucous membrane of the lower lip, along the line of the

teeth. Wassermann reaction proved positive, and the patient was placed on mixed treatment. Within a month all evidence of syphilis disappeared from the lip.

Even the most expert may make mistakes in diagnosis, but the aim should always be toward the minimum of errors of this kind. More care in the diagnosis in this case would have cleared up the nature of the trouble. Furthermore, if the condition had been cancer, the use of a caustic was ill-advised; if it were due to syphilis, the caustic would do no good. The use of the caustic, too, masked the signs of the disease that were really present.

Case 2. S., female, 43 years of age, was referred to me by her family physician, March 9, 1908, for diagnosis and treatment of the condition shown in Fig. 2-A. The patient gave the history of having cut the lower lip slightly in August, 1908, and of the development thereupon of the ulcer shown in the picture. She consulted sev-

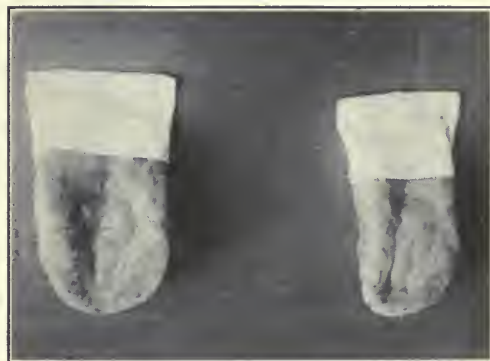


CASE 2. Fig. II.

eral physicians, all of whom advised removal of the diseased area. A piece of tissue was removed from the ulcerated area and sent to a pathological laboratory for examination. The report was that "the diagnosis was tuberculosis. Epithelioid cells, giant-cells, lymphoid elements and caseation are all present and the microscopical picture is that of typical tuberculosis. Syphilis, epithelioma and blastomycosis can be excluded." The report from another laboratory was to the effect that a careful search through the serum from the lip "has failed to determine the presence of the spirochete pallida. The serum obtained was of a very satisfactory sort for this examination." From a third laboratory came the following with reference to the examination of the specimen of blood: "It gave such an

absolutely positive result to Noguchi's modification of the Wassermann reaction for syphilis that there can be no doubt of the presence of syphilis." Mixed treatment was administered for a few weeks, with disappearance of all signs of the disease, as shown in Fig. 2-B., which was taken from a wax cast of the lip made two months after the treatment was begun. She took medicine for over a year, and has been perfectly well ever since.

In either of these cases a cursory clinical examination might easily lead to the diagnosis of malignant growth. In the second case removal of the ulcer could have been effected with very little or no disfigurement, but it would not have cured the syphilis. To have removed the lip and the glands of the neck, as would have been the logical procedure had the condition been cancer, would have subjected the patient to unnecessary and absolutely useless disfigurement and suffering.



A CASE 3. Fig. III. B

Case 3. F., male, 13 years of age, referred to me at the New York Polyclinic Hospital, February 23, 1915, by Dr. Louis Broter, for diagnosis and treatment. According to the history, when the boy was eight months old his mother noticed a lump on the side of the tongue, about the size of a cherry. This was treated in Russia by injections of some irritant that caused the tongue to swell. About four years ago, in his city, several small pieces were removed for examination, but the microscopic findings could not be ascertained, the physician who had charge of the case at that time reporting that the slides and the report of the pathologist had been lost. On

several occasions the cautery was applied. Three doctors consulted pronounced the growth carcinoma, and advised removal of the tongue. When the symptoms were not

the encroachment upon healthy tissue, a section was removed for microscopic examination. The report was *lymphangioma of the papillomatous type*. Approximately



CASE 4. Fig. IV.

acute, the condition was as shown in Fig. 3-A. There was a swelling about the size of a walnut over the right margin of the tongue, extending nearly to the center, the surface of this being irregular. Every two



CASE 4. Fig. V.

or three weeks there is an attack of acute inflammation of the tongue, sufficiently severe to cause the patient to go to bed. With proper precautions for preventing



CASE 4. Fig. VI.

one-third, longitudinally, of the tongue was removed, as shown in Fig. 3-B. Further examination of the section removed showed absolutely no vestige of carcinoma. The patient is perfectly well today.



CASE 4. Fig. VII.

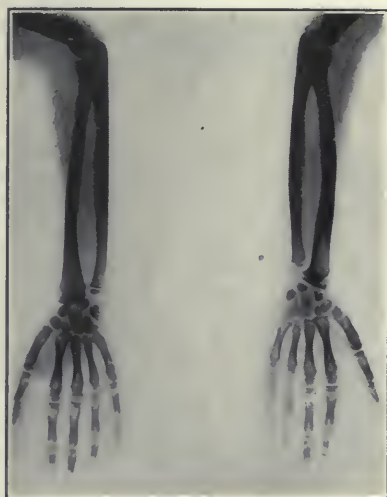
In a patient of the so-called "cancer age" such a condition as this child presented, subjected for so long to what may justly be called the "tampering" method of treatment—injections, cauterization,—plus the

constant irritation caused by rough food and the process of mastication, there is a strong possibility that malignant metamorphosis would have ensued. As it was,



CASE 4. Fig. VIII.

the boy was buffeted from the optimism which made possible in such a case the dallying with the injections, caustics and the removal of sections for pathological



CASE 4. Fig. IX.

study, to the pessimism which unqualifiedly pronounced the condition malignant and advised amputation of the tongue.

Case 4. W., female, three years of age

when first seen by me, February 14, 1908. At that time she had a swelling of the right forearm, as shown in Fig. 4, and in Fig. 5. Fig. 6 shows the X-ray picture of the well arm, for contrast. She was examined at six different hospitals and clinics, the diagnosis of osteosarcoma being made by all, and all advising amputation of the arm. Arrangements were made for the amputation at one of the New York City hospitals, but the child was taken away from the hospital by the mother at the last moment, as she said she would rather have the child die than go through life with one arm. There was no history of syphilis, but as a precaution she was given active mixed treatment without results. Active tuberculin test also proved negative. Inasmuch



CASE 4. Fig. X.

as the mother refused operation, I placed the child on expectant treatment and kept her under observation. To my surprise, the swelling began to diminish in size. Fig. 7 shows the condition, as revealed by the X-ray, in 1912. Fig. 8, taken May 28, 1915, by Dr. Lewis Gregory Cole, shows the present condition of the bone. Fig. 9 shows both arms taken for comparison. The X-ray report is as follows: "A very slight thickening of the cortex of the right radius and a shortening of about $\frac{3}{8}$ inch in the length of the ulna, together with a slight irregularity of the epiphyseal line, are the only remains of the very extensive lesion which was observed at the time of the

first examination." Fig. 10 shows the little girl's arms to-day.

Case 5. M., female, 21 months of age, when referred to me for diagnosis and treatment, by Dr. Daniel P. Maguire, Stapleton, N. Y., May 5, 1911. A year before the mother had first noticed a small swelling over the left tibia. She consulted several physicians, with varying results as to diagnosis and advice. Some believed there was sarcoma and advised radical surgery. X-ray examination, (Figs. 11 and 12) at the time she was sent to me, made by Dr. Lewis Gregory Cole, showed "thickening of the cortex of the bone, more marked anteriorly, and beneath this, at the point indicated by the arrow (Fig. 12-A)



CASE 5. Fig. XI.

in or near the medulla, is a small area of destruction of the bone, probably an abscess. . . . The structure of the bone in this case does not have the appearance of a specific lesion." Wassermann was negative. Upon these findings the leg was opened and a small portion of the tibia removed, with a little dead bone. Microscopic study of the tissues removed gave no evidence of sarcoma or other new growth, and no indication of syphilis.

This case, with the preceding, illustrates excellently well the dangers of too cursory examination, and of the omission of any diagnostic test by which the true condition may be ascertained. Amputation, as was advised in each case, would have been a great injustice, entailing a serious handicap upon these children.

Case 6. C., 55 years of age. Referred to me by Dr. I. A. Stoloff, December 5, 1913. Three years before a lump appeared in the left breast, with nodules in the axilla. The nodules increased in size, and abscesses formed. She grew progressively worse. The abscesses were opened and the sinuses repeatedly curetted, by different physicians in different clinics and hospitals. She soon began to lose flesh and strength. The entire left breast and chest wall became involved, with some swelling of the left arm. The nipple became retracted, as shown in Fig. 13. Six surgeons made the diagnosis of sarcoma. One made the diagnosis, "irremovable sarcoma of chest wall—well dissemin-



CASE 5. Fig. XII.

ated malignancy," and another refused her admission to his sanitarium, assuring her family that she had incurable cancer and had only a short time to live. Her pain finally became very severe, morphine was losing its effect, and Dr. Stoloff was called in by her family and begged to give her something to end her suffering. He insisted that she be sent to the hospital, whereupon she was sent to the New York Polyclinic Hospital, December 5, 1913. I made the diagnosis of tuberculosis, on the history and characteristics of the case. The tuberculous abscesses were not so large in the breast as in the chest wall, under the pectoralis major, so that what seemed to be a tumor of the breast was in reality the large abscesses behind the breast, pushing it forward. The abscesses were opened and curetted and she has been perfectly well

since. Her present condition, as to the breast, is shown in Fig. 14.

Case 7. M., 65 years of age, married, no children. Consulted me, August 4, 1914. Six years before she first noticed a lump in the upper and outer quadrant of the left breast. This was not painful until two years before (1912), although the tumor had slowly increased in size. Her family physician pronounced it cancer, but advised against operation on account of her poor general condition and weak heart. Another physician gave her electrical treatment for two months, without benefit, then, at the hands of another, she was given an "injection treatment" for two years. She was assured that she had cancer, that it involved the lung, and that it was inoperable. For a number of years she had had

the malignant nature of small tumors in the breast, allowing this diagnosis to obscure the underlying cause—the intestinal condition. Proper attention to the long-existent "stomach trouble" might have cleared up the lumpy condition in the breast, and would have obviated the necessity of a serious operation after the patient's vitality was at such a low ebb. With a history of digestive disorders of long duration, a lumpy condition of the breast or breasts should always suggest the possibility of chronic intestinal stasis, and the patient, under most careful observation should be given the benefit of the prescribed dietetic, hygienic, and supportive treatment for this condition. If this fails to clear up the condition, laparotomy may be indicated. Numbers of these cases have been found to



CASE 6. Fig. XIII.

"stomach trouble," with pain and discomfort, and frequent vomiting. When she consulted me examination showed considerable tenderness over the stomach and ascending colon, a lumpy condition in the upper and outer quadrant of each breast. Radiographic examination confirmed the clinical diagnosis of chronic intestinal stasis. Laparotomy, November 9, 1914, further corroborated these findings. The lumps in the breasts were removed, and microscopic examination established their nonmalignant nature. There was no evidence of cancer anywhere. The patient developed post-operative pneumonia after laparotomy, and died, November 13, 1914. Autopsy showed absolutely no evidence of cancer.

This case is an excellent illustration of the disastrous results of taking for granted



CASE 6. Fig. XIV.

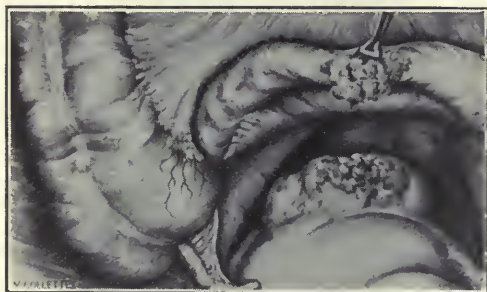
yield to such treatment, the lumps in the breast disappearing completely.

Case 8. H., 26 years of age, single. Consulted me November 2, 1914. In 1910 she first detected a lump in the left breast. This was more or less painful at times. It gradually grew until, in the fall of 1914, it was the size of a mandarin orange. Her family physician and three consultants pronounced it cancer, and advised operation, but frankly told her that it was too late, as there had developed tumors in the right breast and additional ones in the left. When she consulted me examination showed the following: Both breasts large and dependent; nipples not retracted; no palpable glands in the axilla of either side; some enlarged glands in the left axillary

line, close to the breast; a lumpy condition of the right breast; the left breast the seat of a large, soft fibro-adenoma, in the lower inner quadrant. The patient was sent to the New York Skin and Cancer Hospital for operation. The multiple adenomata were removed by the conservative method—incision under each breast, the breast lifted up, the tumors removed, leaving the glandular structures intact,—and the configuration of the breasts preserved. Pathological examination verified the clinical diagnosis of adenoma.

The patient's general health, which had been very poor for a number of years, improved under rest, and dietary and tonic treatment, plus, perhaps, the psychic benefit of the knowledge that she was not, after

16). These adhesions were freed with great difficulty, it being necessary to dissect down to the mucous membrane of the gut before the bowel could be detached from the uterus. On the fundus uteri was a softened, degenerated, inflammatory mass, probably a fibroid cyst, to which the ileum and pelvic colon had adhered. Between the knuckles of the loop of ileum, which was almost completely obstructed, was a mass of pus and the left fallopian tube. The uterus was greatly enlarged, filling the entire pelvis. A portion of the tissue removed from the adherent intestine and uterus was immediately examined under the microscope, and found to be inflammatory. No resection of gut was therefore deemed necessary, but the uterus was



CASE 9. Fig. XV.

all, the doomed victim of cancer. She has since been perfectly well.

Case 9. J., female, 65 years of age, widow. Referred by Dr. Winifred D. Banks, East Orange, N. J., January 26, 1915, for advice concerning a large pelvic mass (fibroid with probable malignant degeneration). In July, 1914, eighteen years after the establishment of the menopause, the patient began to have a uterine discharge of pus and blood, continuous, but sometimes more profuse than at others. There was progressive loss of flesh and strength, and almost total obstruction of the bowel. Laparotomy was advised, with hysterectomy, and the correction of other abdominal conditions that might be found. This was performed at the New York Polyclinic Hospital, Feb. 17, 1915, with the following findings: A loop of the ileum was adherent to the fundus uteri and acutely angulated (Fig. 15); a loop of the pelvic colon was similarly adherent, (Fig.



CASE 9. Fig. XVI.

completely removed. Multiple fibroids had formed, which had degenerated and formed a pus sac in the pelvic cavity, surrounded by intestines and uterus. The bladder was tightly adherent to the mass and formed part of the abscess wall. In order to dissect away the bladder that organ was opened and later closed. The patient made an uneventful recovery and has gradually improved in health and strength.

This patient had been told by several physicians who examined her that she had irremovable cancer of the pelvic organs, and that operation was useless. Her complete recovery justifies the willingness to take a chance in a seemingly very doubtful case.

Case 10. E., male, 45 years of age. Consulted me November 13, 1909, for what

had been pronounced by four doctors irremovable cancer of the rectum. Despite this prognosis, he was admitted to the New York Skin and Cancer Hospital, and on November 19, 1909, I removed the rectum from below, saving the sphincter, bringing the end of the gut down and suturing it in place. On March 16, 1911, a small recurrence, resembling a hemorrhoid, was removed. Since that time he has been perfectly well. The last examination, May 29, 1915, showed no evidence of recurrence.

With only a slight recurrence in the year and a quarter after the removal of the rectum, and with an interval of four years of freedom from recurrence, there is a fair chance that the man will have no further trouble. Even should there be a further recurrence, he has had more than five years of relief from the deplorable condition in which I found him—an excellent example of at least a seeming cure of the seemingly incurable.

Case 11. S., female, widow, aged 44. Referred by Dr. Eliza M. Mosher, of Brooklyn, November, 1910. The diagnosis of irremovable cancer of the uterus had been made by two surgeons. Examination gave evidence of advanced cancer of the uterus, with apparent involvement of the broad ligaments and pelvic glands. Operation at Alston's Private Hospital, November 15, 1910. Arterial ligation of the pelvic vessels, with lymphatic block; panhysterectomy, with vaginectomy (Wertheim). Uneventful recovery. Pathological examination by several pathologists confirmed the diagnosis of carcinoma. The patient is perfectly well to-day, four and a half years after the operation, and after she had been repeatedly pronounced "inoperable" and "incurable."

It is held by some surgeons that when glands are palpable in a case of cancer of the uterus, it is too late for even a Wertheim operation. Had this opinion been followed in this case the patient would have been left to unnecessary suffering and early death. As it was, by tying off the blood-vessels and removing the glands along the ureters, from the obturator foramen to the receptaculum chyli, it became possible to do what seemed impossible before, and a complete removal of all macroscopic evidence of the disease was

effected. Inasmuch as four years and a half have brought no recurrence, presumably all microscopic disease also was removed.¹

Case 12. H.,² female, 54 years of age. Referred by Dr. Henry Hughes, West Long Branch, N. J., November 10, 1909. The patient had had rectal trouble, with chronic constipation, for three years. In May, laparotomy was performed by another surgeon, with the purpose of removing a cancer of the lower bowel. So many adhesions were found, however, that nothing was done, the case being considered one of inoperable cancer, with general visceral extension. She was markedly cachectic when I first saw her, had experienced great loss of flesh and strength, and was suffering from the evil effects of almost total obstruction of the lower pelvic colon by the advanced cancer of the rectum.

Exploratory laparotomy, November 22, 1908, with the hope that the first operator had been mistaken in the extent of the disease, and believing that if this were not the case, a colotomy would give relief. Extensive adhesions were found, but they were clearly from an old peritonitis following childbirth, years before, and from the previous operation. These were separated. Diseased left ovary and tube were found, and salpingo-oophorectomy was performed. By the combined operation, using the vaginal outlet, 2½ feet of intestine, with mesorectum and meso-sigmoid, were removed. The cut end of the rectum was brought into the pelvis. The sphincter, with the last two inches of the rectum, was saved. The patient made an uneventful recovery, has fair control of her bowels, and when last seen, June 1, 1915, was perfectly well.

In this case the error in diagnosis was not with reference to the disease, but with reference to the stage thereof, and its operability and curability. The seemingly hopeless condition was due to complications which, in themselves, were not of serious moment so far as prognosis was concerned. The correction of these complications

¹ Bainbridge,—"Arterial Ligation for Irremovable Cancer of the Pelvic Organs: Technic Adapted and Amplified." *Woman's Med. Jour.*, April, 1911.

² Reported in: "Possible Errors in the Diagnosis of Abdominal Cancer; A Plea for Exploratory Laparotomy; Illustrative Cases." *New York State Med. Jour.*, October, 1913.

changed the entire aspect of the case.

This patient further serves to emphasize the importance of differentiating between malignant and nonmalignant adhesions, between an inflammatory condition of the tubes and ovaries (which pathological examination proved to be the case here, with no malignancy present), and cancer. Valuable time was lost by the failure to recognize these differences, and the patient's life was thereby placed in jeopardy.

In this series of twelve cases, which might be multiplied many times, may be found illustrations of all the classes of cases mentioned in the beginning, except the last—the inoperable, irremovable, and incurable. In each instance there had been a gloomy prognosis with reference to the operability, and certainly with reference to the curability of the condition. Yet every patient is alive and well to-day, with the one exception of the patient in Case 7, who died of post-operative pneumonia. The prognosis was not especially favorable in her case, because of the long delay, and yet, but for the unfortunate contingency which arose, she, too, might be alive and well.

It is my purpose here, therefore, not to record unique cases or new and striking methods of treatment, but rather to emphasize the importance of giving the patient the benefit of every possible doubt in favor of palliation or cure. Those who have followed the progress of surgery closely know full well that the day of miracles is still with us, for feats are being accomplished all the while which a few years ago would have been considered impossible.

Such cases, furthermore, serve to show how much work is yet to be accomplished within the medical profession, before the campaign of education may be very broadly extended among the public at large without fostering an element of harm which may outweigh the modicum of good.

EPITHELIOMA CUTIS.

BY

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Were we to take our dogma from a certain school of zealous propagandists we should be disconcerted and disheartened by the whirlwind advance of malignant disease. To prove their case they fly to statistics and as these are readily amenable to any sort of manipulation, they make quite a showing in support of their portentous predictions. As the figures mount is it not undeniable that cancer is rapidly increasing? If within a given area it is demonstrable that there are twice as many cases as there had been twenty years before, who can fairly dispute the deduction that cancer has doubled its hideous toll? If over the civilized world the total is steadily soaring it must be admitted that the situation has got beyond the control of the methods heretofore employed. It would at first glance appear to be an unanswerable indictment of the surgeon and his working hypothesis. If, despite all the radical operations undertaken to thwart the ravages of this malignant mystery, it has made materially accelerating headway, is it not imperative to seek some other road of fairer promise? If cutting it out only makes it grow the ranker should we not at once forego this evil practice? If, to paraphrase a venerable folk-word, we "have made two cancers grow where only one had grown before" we have succeeded most effectually in bedevilling the whole business and should yield the field to those who are better fitted for the work. All this would be unanswerable but for one trifling inaccuracy in the indictment. Cancer is not increasing as fast as these reactionaries main-

tain. The recorded cases may be far in excess of those of a previous generation, but so is the size of the population. The *proportion* of cases to the number of inhabitants has not greatly changed, because the assembling of vital statistics is in many communities of quite recent origin, and hitherto hidden conditions are now brought into the record. Again our means of diagnosing cancer have been enlarged and sharpened with obvious results. There is no doubt whatever that with our modern arms of precision we have considerably increased our range and have hit many a mark heretofore obscured.

Interpreting the figures to suit themselves and omitting all discrediting considerations, the proponents of the medical treatment of cancer claim to find in the diet of certain peoples, evidence in support of their position. Rice eating peoples are held up as conspicuous examples of relative immunity to cancer. It is argued that because they eat practically nothing but rice, the low cancer percentage among them is due to this restricted diet. This would be a tremendous blow were it not for one or two mitigating circumstances. Item: rice eating countries are not as far down in the percentage column as we are led to believe. They are overcrowded countries, miserably poor and squalid countries, in which the gathering of reliable statistics is a matter of the greatest difficulty, and in which the number of actual victims is largely in excess of surface indications. Item: Rice eating countries have climatic and industrial peculiarities which may have as strong a bearing on their relation to cancer as the question of diet. Item: If cancer is found at all among rice eating peoples, it is a full admission that a diet of rice does not prevent cancer. It is manifest therefore that

other factors must be adduced to account for the low percentage among such peoples even if we admit that it is a correct estimate of the conditions.

Conversely it is attempted to be shown that meat eating peoples are most prolific of cancer. Statistics are again requisitioned for this demonstration, and are handled with the same disregard of qualifying circumstances. It is triumphantly shouted from the medical housetops that, meat eating peoples showing a very much larger percentage of cancer than rice eating peoples it is indisputable that the eating of meat contributes heavily to the production of cancer. Overlooking the probable inaccuracy in the numerical compilation and conceding for the moment that the disproportion is as marked as they would have us believe, is the deduction any more rational in the one case than in the other? These propositions being co-relative is not the answer to the first an answer to the second? Meat eating England is contrasted with rice India. The consumption of meat has doubled in a certain period in England and the increase of cancer has been fourfold. That is the argument. It is as fatal to the debater to prove too much as to prove too little! The advocates of the meat-eating-etiology of cancer have asserted that doubling the efficacy of the cause has quadrupled the output! This is opposed to any thing in reason or nature. Twice two are four and never eight by any scheme of mathematics ever devised. At once it is evident that out of their own mouths they are confounded. Some other influence besides the consumption of meat was responsible for half of the increase to say the least. What that is we do not know but we do not acknowledge that these self-contradictory statisticians know either.

The same class of faddists assert that aboriginal peoples are singularly exempt from cancer. The wilds of Africa are invaded for the proof, wherein it is obvious that reliable testimony is difficult to obtain. As bearing on this proposition let us consider for a moment the North American Indian. He was an Aborigine. He was wild. He lived in a state of untrammelled nature. He fulfills all the requirements cited by the African explorers. As far as we can discern he was not cancerous. This appears to make for our opponents. But we will not emulate their lofty disregard of inconvenient considerations. We will bring forward all the facts. The North American Indian lived almost exclusively on meat and maize. He killed the buffalo and deer and dried the meat in the sun and softened it under his blanket saddle. He ate voraciously of this. Being nomadic he did not cultivate the soil and his remaining sustenance was got from corn. I think this disposes of another reincarnated wraith of medical mythology. A fair analysis of the facts at our disposal leads inevitably to the conclusion that diet is not responsible for the development of cancer. The bald assumption to the contrary cannot conduce to any material advantage and may deflect our energies from rational investigation and timely surgical intervention.

As with diet so with occupation. There do not seem to be any forms of toil especially likely to induce malignancy, except chimney sweeping and working in paraffine. These two avocations lead to the formation of warts about the legs and scrotum which subsequently degenerate into cancer. But there is no other distinctive class whose labor tends to the same result. And there are many whose task is accomplished with much irritation and trauma. The whole

question of the inciting power of irritation is chaotic and perplexing. There are so many instances of the innocuousness of prolonged irritation and so many of the virulence of short irritation that it is impossible to predict consequences in any given case. It is a matter of common observation that cancer has appeared in some individuals after the most insignificant injury, whereas others have safely weathered immeasurably greater provocation. Illustrations of this will arise in the memory of every physician. Familiar to us all is the apparent immunity of the stomach of the chronic drunkard. This is an oft told tale but its bearing on the problem under discussion is so direct and eloquent that it is worth the repetition.

The supporters of the dietetic origin of cancer include in their list of injurious ingesta, alcohol, tea and coffee. Alcohol is known to be a pronounced irritant to the mucous membrane of the stomach. This organ takes on a condition of chronic congestion accompanied by matutinal attacks of violent emesis, and resulting in the connective tissue changes inevitable under such circumstances. Added to this we have the reputed efficacy of alcohol as a specific agent of malignancy. The stage is set here for a grand tragic denouement. But *mirabile dictu* it ends in a fizzle. For if any fact is determined with certainty it is that the drunkard is not specially marked for cancer of the stomach. He gets a horse-hide stomach from persistent inflammation, he gets cirrhosis of the liver, and he gets a gouty kidney with dependable regularity but he does not get carcinoma ventriculi any more frequently than his abstemious neighbors. What has happened to the mechanism? What has produced the fizzle? The same eccentricity is observable in the activity of other varieties of irritation. From

a slight contusion one woman develops a carcinoma of the breast, another will resist repeated assaults of a much more serious character. An engorged inflamed and roughened uterus hanging through the vulvar outlet in the third degree of prolapse, incessantly subjected to unusual bruising contacts, has successfully resisted for a quarter of a century every impulse to degeneration; another uterus from a small erosion originating without discoverable trauma, will perversely and persistently elaborate a carcinoma. A woman who has suffered with descensus (not as severe as the above but still marked and disabling) for a long term of years without the slightest trace of disquieting developments, suddenly achieves an epithelioma of the tongue from *three months* friction against a sharp tooth. Both localities were cancer prone and why the shorter incitation should prove more potent than the longer eludes our most profound reflections.

Perhaps one smoker in a thousand gets a cancer of the lip. Perhaps one cervix in a thousand resents a grisly laceration. These figures are not accurate but purely illustrative. What quality is it in the make up of the individual that dooms him to defeat under conditions innocuous to so many others? We answer that by saying that he has a predisposition to cancer. As is perfectly clear that is the substitution of one word for another without any additional information. What do we mean by predisposition? Tendency, inclination, proneness to a thing. "Words, words, words" meaning the same thing and meaning nothing! Until we can define "predisposition" and explain exactly what it consists of, we have no right or title to becloud the problem by stupidly repeating it. We should deserve the rebuke administered by the elegant

Rogue Riderhood to his daughter Pleasant when he gruffly adjured her "to stop poll-parroting."

It is universally conceded that age is deeply concerned in the genesis of cancer. Most of the cases occur after middle life. There must be some decline of the powers of resistance as the years accumulate. What that decline really is proves a bootless speculation. We can only define it as an increased predisposition and that is merely more "poll-parroting." It is curious to note however that only a small percentage of old people are attacked, and that there is a depreciation in the rate of increase among males after fifty-five. It is further of interest that as the statistical multiplication of cases goes on and as our diagnostic acuity is increased the discovery of cancer in those of fewer years is less and less surprising. Xeroderma pigmentosum originating in childhood and characterized by warty cutaneous growths that degenerate into true epithelioma, proves beyond all possibility of cavil that cancer may strike the very immature and that age has no exclusive title to it. Associated with the theory of the systemic causation of cancer was the indoctrination of hereditary transmission. If it was in a person's blood, it was logically the portion of his offspring. The disproval of inheritance is a facer for the aforesaid theory of systemic causation. There is no pretence even among the reactionaries to recede to that position. It is abandoned by practically all observers. With the exception of xeroderma pigmentosum which is a family disease there is no salient on which to hang such an argument. Instances of the direct descent of primary cancer are readily explainable on the ground of coincidence.

Declining to acknowledge the dietary etiology of cancer for the very good and

sufficient reason that it is conjectural and unsubstantiated, we are utterly unable to provide a substitute. An immensity of effort has been expended in its perquisition and while a mountain of verbiage has fallen upon miles of paper, nothing positive has struggled to the surface. We simply do not know anything about the essential cause of cancer.

Uncertainty regarding the actual complexity of the various factors supposed to be concerned in the production of cancer is counterbalanced by the prudential considerations, arising from the possibility of this hideous event.

While age is not the decisive factor, still malignancy occurs so much oftener after the meridian is passed that it is the part of wisdom for us to be especially alert at that time. And while irritation likewise is decidedly problematical in its degenerative sequelae, yet this untoward development is so frequently associated with irritation that it should be viewed askance and promptly removed wherever practicable. Tumors of the breast however trivial should not be tolerated a day beyond the speediest interference. This applies to women, young and old.

Irregularities of menstruation, especially in the way of excess and intermenstrual "spotting," a vaginal discharge that is pink or brown, the excitation of bleeding by coitus or douching, should arouse suspicion and demand instant investigation. These phenomena are too often ascribed to "the change of life" and disregarded until the onset of pain or a profuse metrorrhagia, arouses apprehension. By that time the damage is complete and a massive operation is performed in vain.

A persistent erosion of the nipple or an unilateral "eczema" of the same calls for

the greatest watchfulness and must be summarily dealt with if it balks our medication.

Neither man nor woman nearing forty should trifle with a chronic dyspepsia a chronic laryngitis, a chronic cystitis or the irritation of a rasping tooth. The smoker must beware of a papule on his tongue or lip and not squander the valuable hours that germinate metastasis. Leucoplakea too, that inexplicable keratosis of the mucous membrane of the tongue and cheeks ascribed to lues, ascribed to smoking, ascribed to psoriasis, and occurring independently of them all, is a frequent precursor of epithelioma. Its gravity cannot be exaggerated. Every effort should be made to destroy it and if unavailing a jealous eye should be kept upon it for the first evidence of degeneration.

On the skin, senile keratoses, seborrhoic warts, moles, scars, old ulcers, adenomata, papillomata and lipomata may eventuate in epithelioma. The melanotic nevus is especially menacing. The attribute black is by metonymy ascribed by the common people to a person or thing conceived to be particularly dangerous. They say a "black scoundrel," the "black plague," a "black frost," etc. With regard to melanotic nevus the adjective has peculiar significance. It is literally black and black in its ominous outlook. At the first hint of activity in such a structure it should be cut away. Epithelioma in the old is prone to arise on the site of a keratosis or seborrhoic wart. These common alterations in the epidermis are the basis of most of the cancers of the skin, because of their very liberal supply. They should be guarded against irritation of every sort. Patients should be counselled to leave them severely alone and not "tinker" with them. If ugly signs develop the surgeon is

indicated. As noted under the head of contributing factors to the development of cancer the slightest trauma or irritation may light up malignant reaction. Perhaps for a long enough time after the trivial accident to obscure the memory of it, there will be nothing at the point involved. Then a little nodule may appear which usually unheeded, gradually assumes larger proportions. Soon the skin becomes adherent, then shiny and red. Finally it ulcerates and the real character of the mischief is manifest. This serious consequence has been known to follow the pressure of a suspender strap on one shoulder, the pressure of a garter on one leg, the pinch of nose glasses on one side of the organ. Why the discrimination in the site of the reaction is impossible of explanation.

The ulceration that occurs on the summit of the nodular lesion described will be shallow and covered with a scab which is constantly being knocked off and replaced. A pearly edge may be detected before very long which is distinctive of epithelioma. It is the gross appearance of the cancer pearls or nests that form the histological basis of the neoplasm. These nests are constructed of the inverted epithelium which proliferates downward, in obedience to the mysterious law governing the development of cancer. The horny layer is within and the rete without. The shape is due to the resistance of the tissues to the advance of the traitorous cells. For the invasion is of the cells indigenous to the ravaged territory. Its own offspring turns and rends it. Pressure on the stricken field excites inflammatory resentment which serves to favor the process. Eventually the reciprocal pressure induces ulceration and the hideous picture is complete.

Sometimes the nodular formation projects quite markedly above the level of the skin and the surmounting ulceration gives it the appearance of a miniature volcano. This is styled the crateroid variety of epithelioma. To be sure it requires a little exercise of the imagination to make the comparison, but with perseverance it may be done.

The papillomatous or warty epithelioma is marked by a hyperplasia of the papillary elements of the skin. As its title indicates it has a verrucous aspect. It bleeds readily and ulcerates viciously. Coming from deep down in the skin it spreads rapidly and metastasizes bounteously. A warty growth that bleeds on trivial contact is to be reckoned malignant even if the host is apparently too young for such a diagnosis. We must be alert to the possibility of puzzling idiosyncracies. Presenility is revealed in xeroderma pigmentosum as we have remarked a few lines back and it might just as readily assume the form of precocious carcinoma.

Acanthosis nigricans is another disease like xeroderma pigmentosum illustrative of the occasional cancerous obsession of the premature and of the virulence of verrucous malignant manifestations. It may occur at any age after childhood. It tints the skin any shade from yellow to dirty brown. This is general. Very soon verrucous excrescences appear, especially in the axillary, genitocrural and abdominal regions. Sometimes these break down into epithelioma. Invariably there is a cancerous accompaniment in some one of the abdominal organs which quickly terminates the monstrous process.

The condition produced by an X-ray burn might be fairly enough termed a premature aging of the skin. It is as much like

the condition observed in xeroderma pigmentosum as it is possible for any two pictures to be. And epithelioma frequently follows X-ray burns.

A typical epithelioma presents three distinguishing features. These are a shallow ulceration, a persistently reforming scab and a rolled pearly border. Its tendency is indolent and in consequence its extension is gradual. Pain is not a serious consideration unless the situation is peculiar or the patient's sensibilities are unusually acute. No part of the cutaneous surface is proof against the invasion of this sneaking marauder. It has its favorite haunts however and is usually seen upon the forehead, temples, eyelids, nose, cheeks, helix of the ear and angle of the mouth. But it may, from caprice, assail the chest, back, legs or hand. It has been observed upon a ventral hernia, a patch of psoriasis and in the indurated edge of an old ulcer of the skin. Its liability to cripple the penis is a matter of record. In any of these various localities always hold fast to the essential brand marks which have been enumerated and error is unlikely. Remember the persistent scab, the ulceration and the pearly border. Of these three indications the most significant is the persistent scab. Of course the scab necessarily implies ulceration. But sometimes the ulceration is so small and shallow that it is overlooked and the pearly border may be undiscoverable. But you will always get the scab.

In rodent ulcer we have a lesion which some clinicians style a precancerous phenomenon but which has all the characteristics of the type above described except that it is (even when fairly developed) a much more superficial process. It has a fancy for the cheek near the eye and owing to its lack of depth is little liable to metastasis.

This is one of those hybrid hypocrites, denominated "benign malignants." We hear this doltish drivel repeatedly that certain forms of epithelioma are benign! Because they are slow they are benign! Because they may make no serious onslaught for several years they are benign! As benign forsooth as an "arrested" tuberculosis, as a compensated cardiac regurgitation, a gouty kidney! All set and waiting for the patient to weaken under some unusual stress and give them the opportunity to finish him! Benign! De we not point a warning finger at the seborrheic wart and gravely impress its pernicious possibilities? And shall we airily disregard the consequent concrete cancer as innocuous, nay positively benignant—benign!

The benignity of epithelioma is sometimes observed in its rare and curious assumption of the appearance of morphea. None of the classical stigmata of cancer are to be found. There is hardly any appreciable thickening. There is nothing but a whitish yellow discoloration framed by a red areola. Some infiltration may be palpated in this edge. There is never any ulceration. It just creeps along gradually expanding for all the world like a piece of parchment engrafted in the skin. It has been styled because of this resemblance the parchment type of epithelioma. It is also known as the flat type, but this title is not as descriptive as the other. It is easy to conceive how this "benign" fraud could creep and sneak undetected and unappreciated upon some ripe and juicy congestion of lymphatics and then cast aside its air of innocence and get to work in deadly earnest.

Epithelioma has simulated lipoma. Ulceration tells the tale. If doubt arises a biopsy may be done or better still the tumor may be removed and with it all possibility of damaging error. It is a matter of the most

elementary discretion to remove all new growths of whatsoever character and wherever situated in order to forestall malignant degeneration.

Multiple benign cystic epithelioma is a paradox. It occurs in an outcrop of several and sometimes many small tumors on the face or face and shoulders. These may grow from the size of a pinhead to that of a pea. They are translucent and yellowish. Their histological structure is that of real epithelioma and yet they never pursue the vicious course of an epithelioma except on the rarest occasions. Here is a sprinkling of undeniably authentic cancer nests that never come to anything that (as one may say) die aborning. There is an elaborate erection of the cancer tumor but the malignant soul is lacking.

True carcinoma of the skin is secondary to that of the breast or one of the viscera or develops in the scar of an operation for the removal of such a growth. Nodules form in the skin and subcutaneous tissue. They are firm and waxy and quickly become adherent to the underlying structures. The overlying epidermis is tense and shining and telangiectatic. These unit lesions tend to coalesce into masses. They may extend across the entire chest front and back, producing the amazing enormity of carcinoma *en cuirasse*. Metastasis is speedy in this secondary outburst and the prognosis is of the gravest. Paget's diseases of the nipple and areola is a forerunner of scirrhus of the breast and because of its situation and the time usually lost in treating it for eczema it rarely fails to take its fullest reckoning. It begins with a trifling dermatitis of a scaling character. Gradually this becomes red, moist and granular, and the discharge forms crusts.

The nipple fissures retract and finally disappear in the ulcerating slough. A true scirrhus soon supervenes and the subsequent history is that of this development. If this disease is early differentiated from eczema its fangs are drawn and it is comparatively easy for the surgeon to throttle it. There are some points that make the distinction clear. Paget's is a disease of elderly life; eczema of the nipple, a disease of the woman who is nursing a baby. Paget's is unilateral; eczema is bilateral. Eczema itches; Paget's does not unless by accident. The infiltration of Paget's gives a greater sense of bulk and firmness than eczema. Any disposition of the nipple to retract would be confirmatory of cancer, but by this time its headway would have become so considerable that the sign would be of no advantage. Watch a one sided "eczema" of the areola narrowly and be prepared for radical action.

The diagnosis of epithelioma is usually made with readiness and certainty when it is typical. To illustrate; we are all aware that X-ray burns are apt to result disastrously. We are prepared for degeneration and when it occurs we recognize it promptly. Here the circumstances steer our course no matter what the clinical appearances are. A little erosion on the side of the nose in an elderly person who wears a pince nez and which will not heal after prolonged treatment will also be correctly ticketed. A rodent ulcer constantly tending to enlarge with a pearly border about its excavation or its scab, will not be mistaken. The nodular lesions that seem to be cemented in the skin and prior to ulceration present a stretched and shining surface will arouse immediate suspicion and suspicion will lead inevitably to the correct conclusion. No matter what outline the epithelioma may

assume no matter how insignificant it may appear the persistent scab and the pearly border bring absolute conviction.

But sometimes we are confronted with a situation wherein our criteria of cancer are defeated by complicating circumstances. Sometimes we are put to all of our resources to differentiate cancer from lues. From lupus the difference is not hard to show as a rule, for the reason that occurring at widely separated periods of life their histories are discrepant. Lupus begins in early life and cancer in the old. Very rarely lupus begins within the cancer limits and then there may be difficulty in the discrimination. If the lupus is of the right color, consistency and tardiness its identity is evident. It is a granuloma. Its unit lesion is a pinhead nodule, of apple butter hue and density. It is easily punctured by a wooden toothpick. It remains like a freckle in the skin when pressed upon by a glass spatula. The larger lesions are but multiples of this. Conglomeration may induce a change in gross appearance. Inflammatory reaction may add a firmer feel. Ulceration if conspicuous may especially in the neighborhood of the nose or mouth bring it into rather close resemblance to cancer. The eating away of an ala nasi or an eyelid will accentuate the doubt. The situation will clear if strict attention is given to all its details. If any of the apple butter nodules can be found anywhere in the vicinity the diagnosis is established no matter what the gross appearance of the process. If the resistant pearly edge is discernible cancer is not to be gainsaid. It is confounding to insert another point of convergence but the rounding out of the record compels the assertion that once in a great while epithelioma develops on a lupus ulcer. Biopsy will reveal the cancer and will regulate the treatment. Lupus will have to

give precedence to the immediately graver malady.

With much greater frequency are we confronted with the cancer-lues dilemma. Lues may begin at any time of life. Its tertiary manifestations are very likely to be found at the age most prone to cancer. The tubercular ulcerating syphiloderm may present a circular or oval lesion with an indurated edge and a crusted summit, that very fairly simulates malignant disease. With withering sarcasm, the Wassermann reaction is credited by certain gleeful critics with saving many such lesions from excision, to the detriment of the summary of "radical cures." This is ungenerous and only in a measure true. Doubtless luetic lesions have been removed by the surgeon. But his errors were conservative. It is just as certain that cancer has been vigorously iodized by the physician. And his errors were destructive. In the language of the day the honors were "fifty fifty" and it is idle for either side to boast. We get to the root of the diagnostic difficulty at once through the medium of complement fixation. That is to say we do so most of the time. There is a little uncertainty regarding its reliability in tertiary conditions, although this is contracting under the use of more delicate antigens. Another element of doubt is injected by the consideration that a luetic patient is not proof against cancer, and that the luetic lesion itself may terminate in the more formidable disease. But with a prudent estimation of all the circumstances we receive invaluable assistance from the Wassermann reaction. In the absence of the Wassermann how shall we mark the distinction between lues and epithelioma? The laboratory is not always available, and patients' sensibilities are sometimes grievously shocked by the merest hint of a syphil-

itic possibility. Diplomacy may demand the exhaustion of all other methods of differentiation before the blood is asked for. To begin with the race between cancer and lues is comparable to that between the tortoise and the hare.

Lues will go further in a month than cancer will in a year. Lues is apt to be multiple; cancer single. Lues has a profuse offensive secretion; cancer has a scanty odorless one. Cancer ulcerates superficially; lues more deeply. The scab of cancer is thin and reforms promptly after detachment. The crust of lues is thicker, may be laminated or rupial, and reforms much more slowly. Cancer has a pearly border; lues has not. Cancer has a more rigid mass and extends hypodermically a good way beyond its ulcerating surface. Lues imparts the softer sensation of the granuloma. In localities rich in lymphatics cancer will show multiple adenopathy. Lues none at all. On the lip or tongue the differences may be less discernible because cancer will travel very rapidly in those membranous regions and the activity of the circulation approximates the reactions. But here we shall have the certainty of adenopathy to indicate malignancy.

So much for the tertiary lesion. Now regarding chancre. Extra-genitally situated it is not remarkable that it is sometimes mistaken for epithelioma. An indurated mass on the skin of a person over forty, with an ulcerating surface and the enlargement of the nearest gland, might be read into either catagory. The history ought to be of service because a chancre will be full blown while an epithelioma is only budding. But unfortunately, the initial lesion is sometimes brought under our observation after it has been fussed with and irritated; and the history has be-

come hopelessly muddled in the patient's recollection. We can look for no assistance from complement fixation at this time, and a spirochete examination will probably prove abortive because of the injudicious meddling with the "sore." If we can find our pearly border we are safe. If not we must await the roseola. This will appear soon enough to conserve the interests of the patient.

Epithelioma of the penis has wrought consternation in the minds of more than one devoted consort. Suspicion of conjugal treachery once aroused, is difficult to allay. And what is the unbidden thought that leaps in explanation of a sore upon this organ? It is our duty to be extremely cautious in reaching an opinion and drop no hint of a discreditable character until the evidence is conclusive.

Let us not forget that in the failure of the clinical and Wassermann tests to clear away uncertainty we may have recourse to the microscope.

Face to face with cancer—what is to do? A benison on our heads if the answer voiced a sane unanimity! But discord breaks loose, *clamore horrido*, the moment that the question is put. The rice dieticians vociferate stridently. The paste-putters pipe up valorously. The carbon-dioxidizers shrilly acclaim the "freeze-out." The various ray-shooters crack the welkin with their plaudits.

To paraphrase the words of Shakespeare, in the midst of this appalling dissonance:

"The surgeon doth bestride the whirl
Like a Colossus, and these petty men
Walk under his huge legs and peep about
To find themselves undesigned graves."

Read William Seaman Bainbridge's magnificent message to the doubt-distracted

doctor. Digest the argument founded on many years of the closest application to the cancer problem. Opportunities of the fullest and reasoning of the keenest have produced a volume replete with every detail of sound pathology, and rational therapeutics. After its perusal there is no question that all the freakish theories of causation will have been laid to rest with all the mischievous methods of mismanagement.

Indisputably arsenic in the form of Marsden's paste has destroyed epithelioma of the skin. But the method is crude, cruel and hazardous. It entails tremendous suffering, and the risk of toxemia from the absorption of the remedy and the presence of the slough. If its action is complete it cannot effect more than the knife and it does it in the most merciless manner conceivable. Presented to the patient as a less terrifying procedure than operation it is the grossest swindle that could be perpetrated.

Other chemical cures for cancer have appeared from time to time, with blatant boasts of high efficiency, only to give up the ghost when tried in the fire of honest experiment.

The application of solid carbon dioxide has been alluded to above as a game of "freeze-out." This apparent flippancy is in point of fact exactly descriptive of its mode of attack. It is an attempt to destroy the malignant growth and its radicals by freezing them to death. The rational conclusion that it could not do it is supported by the fact that it does not do it. To be sure cures are claimed for it, but it must be borne in mind that everything under the sun has "cured" cancer from the "fasting spit" of Celtic inspiration to the disembowelled rat of the Chinese system.

The X-ray is a powerful agent for good in many pathological conditions. It has its record of "cures" in epithelioma. It has likewise its record of failures; and its propensity to make an epithelioma grow where none existed before. Certainly with such a reputation it should not be employed where operation is feasible and where operation is impossible X-ray is impotent.

The discovery of radium threatened to contract the surgeon's preserves in a very material degree. The reports of its marvelous properties were authentic, coming from sources of the greatest credibility, and compelled serious attention. These reports have been in a measure borne out by subsequent events. Radium has cleaned up cancer. It has cleaned up inoperable cancer of the larynx. But it has failed also. And its prohibitive price confines it to a very restricted field. It is a little too soon to make any positive statements about its exact relation to the permanent cure of cancer. Much further investigation on a very much wider scale will be needed to determine this. Meanwhile we cannot sit idle. Those afflicted must be helped, and our sole dependence is on surgery. Dermatologists have a fashion of attacking epithelioma of the skin with the curette under the delusion that they are performing a radical operation, without the disturbing accessories usual thereunto. They tear at the growth in a blundering brutal bruising manner hideous to behold. They attempt to dig it out piecemeal. The procedure is accompanied by numerous lacerations of the base and encompassing tissue, into which are forced the mangled remains of the neoplasm. It is unsurgical and unscientific. It is reckless, ruthless and resultless. It has nothing to recommend it over the swift, sweep of the all-

encircling knife operating in normal territory, ablating the cancer whole and entire, and leaving no detritus for possible reconstruction. Rather it has everything to condemn it. If it is done without anesthesia, (which is its principal appeal to favor) it is as painful as any reasonably rapid cutting operation. If done under anesthesia, it is an utterly unsafe and unjustifiable hazarding of the patient's chances of radical cure.

In estimating the value of the surgeon's work it must be remembered that he alone is certain of removing the cancer root and branch. All other lines of attack leave the suspicion that it has not been completely destroyed. Effecting a closure of the ulceration may be only cloaking the evil. The reduction in size of the tumor may be simply a temporary cessation of hostilities. All measures that account success, the apparent retrogression of the process, leave out of reckoning the impossibility of determining whether there is a total obliteration of the foci of recurrence. The surgeon knows after a safe detour around the lesion *that he has it all*. In metastasis all methods are hopeless unless the glands can be traced to their uttermost malignant ramifications. Here the surgeon offers the only chance, slim as it may be. All the other devices are seen in their pitiful triviality. From the foregoing considerations it should be evident that in dealing with a condition as insidious, treacherous, and destructive as cancer, it is folly to trust to means of which the issue is doubtful. If it be alleged that the surgeon sometimes fails and is chagrined by recrudescence, there is no reflection to be cast upon the virtue of his office, for if with wisest judgment guiding eye and hand he misses full attainment of his quest what shall be said

of the erratic shots in the dark that constitute the other methods of attack? In the casting of results, the failures of the nonsurgical meddlers are by indirection imputed to the surgeon for they swell the total of unpromising cases in which relapse is almost certain because of the loss of invaluable time. If there is a truth in contemporaneous teaching it is that cancer is a local disease, susceptible of systemic diffusion; that it is perfectly curable in its early stages; and that the only certain means of accomplishing that end is radical operation.

THE CANCEROUS AND PRECANCEROUS STATE.

BY

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At this time when so much is being written concerning the etiology of cancer, and while so many workers are concerned with the histogenesis of cancer, it might be well again to call attention to the obvious, to what is so well known about cancer, to its cause, etiology and pathogenesis, and to its prevention and its cure.

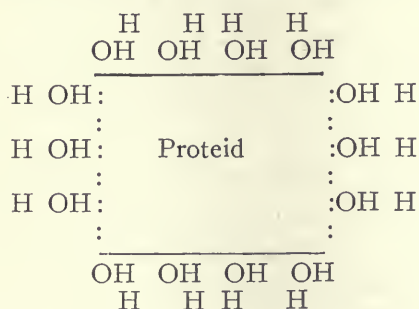
Cancer is a chronic intoxication caused by the faulty elimination and retention of organic wastes resulting in hyperalkalinity.

From this it follows that all research looking to the finding of the parasite of cancer has failed and will continue to fail. It is as futile to discuss a filterable virus for cancer as it would be to expect to find a virus of chronic arsenic or phosphorus poisoning. For the same reason the histogenesis of cancer has very little thera-

peutic value. The etiology and pathogenesis of cancer are the important considerations when the prevention and the cure of the malady are considered.

The cause of cancer has been known so long that it is surprising that so many authorities still claim to be looking for it. Only recently statements of new discoveries have been made which were hoary with age and have been known and published for years. The cause of cancer has not changed with the years. The cause of cancer is just as true to-day as when it was so ably stated by Sir James Paget in 1853. Its successful treatment depends now, as then, upon the same principles so ably stated in his lectures. The only improvement we have made upon the statements of Paget is to make his general statements specific.

The best methods of cure of cancer are based upon its etiology and pathogenesis. In an effort to discredit these successful methods of treatment, the great laboratories

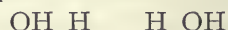


and research foundations have spent millions and years in a research which from the first and from the very nature of things was foredoomed to failure.

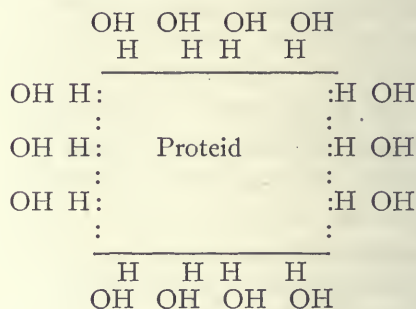
The tissues of the body are composed of the chemical elements in more or less complex combination. In order to be endowed with the attributes of life it is essential that these combinations be in the colloidal state. In this colloidal state the

particles of matter composing the tissues are combined with a greater or less number of molecules of water, not merely by absorption, but chemically combined by ionization of the water. The character of this combination is determined by the positive or negative character of the particles of matter. The strength of the bond is determined by the same characteristics and is measured by the means or force necessary to accomplish dissociation. The bond may be very weak as in the case of glycogen, and in the case of particles of neutral reaction the bond may grade down to water free, not bound.

The ionized water for the purposes of these combinations with positive and negative particles may be written in the following simple formulae:

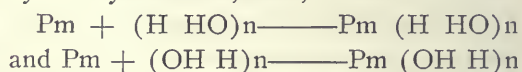


The combination of ionized water with the proteid substance of the tissue cells may be illustrated as follows:

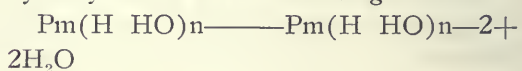


and may be generalized in the following formulae:

Let the proteid substance be represented by the symbol Pm, then,

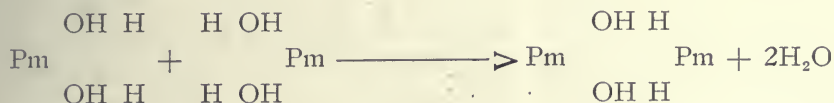


These combinations can be concentrated by dehydration in the following manner:

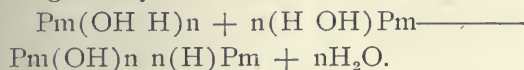




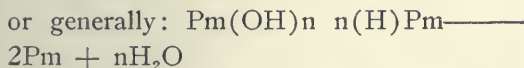
or as follows:



or generally:



Theoretically this concentration and elimination of water can go on until the particles are completely dehydrated. However, this does not occur in living tissue and is only accomplished at higher temperatures. It is illustrated in the following formulae:



Increasing dehydration and concentration are evidenced by an increase in viscosity and surface tension and by an increase of the concentration of the chemical elements of the proteid substance. These colloidal combinations of the tissue cells are not labile solutions else they would tend to crystallize on concentration. They are not crystalline even in the solid condition of cartilage and bone.

From the embryonic state through childhood, adolescence and adult life to senility, the human tissues go through a progressive dehydration and still maintain their colloidal character. But all through this process of dehydration, the solids of the tissues remain in a greater proportion so that with the progressive dehydration there is a progressive increase in the proportion of solids in the tissues. The tissues become dry, lose their resilience, do not eliminate their

wastes readily and take on those characteristics which we term senility. The proportion of water in the human organism in

the different periods of intra-uterine life is as follows:

At three months.....	94.0	per cent.
At six months	90.3	" "
At seven months	86.0	" "
At eight months	83.03	" "

In adult life the proportion falls to 67 per cent.

Alkalinity is the condition of all organic development. In youth the tissues are sufficiently alkaline for their best development under proper trophic control. Until past middle life ingestion and waste are balanced by elimination. The alkalinity of the tissues, the body juices and the blood-plasma is maintained as low as 0.83% when measured by a solution of sodium chlorid. Much of this elimination is accomplished by solution and dialysis in which the sodium chlorid content is a very material aid. Other of the organic compounds must first be broken down by oxidation before they can be dissolved, dialyzed and eliminated. This oxidation is in part accomplished by respiration, and in part by the harmonious action of the internal secretions of the ductless and sexual glands. When the individual passes middle life the first tendency is to lose water from the colloids which compose the tissues. This loss of water results in the aggregation, precipitation, hardening and drying of the substances of the tissues. As the tissues contain alkalies, this loss of water concentrates the alkalinity. At the same time the loss of water hinders solution, dialysis and elimination. The alkalies re-

The number of molecules of CO_2 combining with the proteid colloid may be indefinitely increased to some pathological limit less than n which indicates the number of molecules of ionized water combined with the proteid substance. Each molecule of CO_2 is capable of attaching a molecule of an alkaline hydrate to the proteid substance. As will be seen from the formulæ, each combination results in the abstraction of water from the tissues.

The proteid substances of the tissues are capable of dehydration by evaporation as by aggregation and the action of electrolytes. Evaporation and concentration of alkalinity are largely local, as the alkalies are a fixed and unchanging product in the cells. This evaporation is more marked in persons who lead an outdoor life. It is greater in persons whose skin is not protected by the pigments of race or complexion. Its results are manifest only on those parts of the body not covered by clothing. Therefore, the skin cancers or epitheliomas very greatly predominate in blond men who lead an outdoor life. In many thousands of epitheliomas, I find that they are found above the collar and below the wrist band. In this great number I have not seen to exceed a half dozen on brunet men and not to exceed that number on women. These women were farmers who worked in the fields bareheaded.

When the subject is in the state of hyperalkalinity he is in the precancerous state as far as constitutional condition is concerned. This condition is an absolute prerequisite to cancer growth. Persons in this condition may never have cancer. The second or secondary requisite is chronic irritation. Chronic irritation supplies the stimulus which is necessary to break trophic control during the prevalence of the con-

stitutional condition of hyperalkalinity. It determines the locus of the tumor growth. This requisite must be understood to be chronic irritation. Acute inflammation never causes the development of cancer. Neoplastic tissue, even the tissue of the infectious granulomata develops at the site of chronic irritation. Acute inflammation always destroys neoplastic growth. This distinction must be made as there has been so much written that is erroneous and dangerously misleading as to the rôle of irritation in the etiology of cancer.

These chronic irritations may be and are of very diverse character. They may be only the effect of wind and sunlight on the face of blond farmers, the result of sunburn and the slight freezing of the blizzard and snowstorm, the irritation of the hands of farmers and outdoor laborers, the scratching or rubbing of a wart or a mole, the irritation of the bridge of the nose by glasses, of the lip by the pipe stem, cigar or cigarette, the slight abrasions due to occupation and the cutting of moles and excrescences by barbers. Piles and constipation may cause the location of a cancer in the rectum, cervical laceration and irritation may locate the cancer of the uterus, mastitis, the bumping of nursing children, striking the bed post or prodding with the broom handle may locate cancer in the breast. Many other causes of chronic irritation might be suggested as the secondary causes which stimulate to new growth and determine the locus of the cancerous tumor.

It is encouraging to note that there is again a tendency to recognize the importance of chronic irritation as an etiologic factor in cancer. Some recent writers such as Bainbridge of the New York Skin and Cancer Hospital lay considerable stress upon it. But they make the serious mistake

of confounding chronic irritation with inflammation and do not recognize the absolute prerequisite of hyperalkalinity. More recently Bulkley has recognized that cancer is due to a constitutional condition.

They also have overlooked the fact that the chronic irritations may be both local and reflex. For example, while local irritation may be a determining factor in locating a cancer in the breast, it is by no means the most frequent or most logical factor. Laceration of the cervix uteri is the most common secondary factor in locating cancer in the breast. In the thousands of cases of cancer of the breast examined in these laboratories we have learned that it is not necessary to ask a mother with cancer of the breast whether or not she has sustained a laceration of the cervix. We ask her when she was lacerated. She will give a history of laceration of so many years standing without repair.

The uterus is an organ of great resistance. During the reproductive period nature permits no interference with its function. After death it survives all organs except the bones.

The breasts are not resistant. They are intimately associated with the uterus. They develop with it, are excited and irritated at puberty, at every menstruation, at coitus, at pregnancy. They functionate after birth. Their very function is hypertrophy of epithelium. At about the menopause, when the elimination is bad and the woman is in the hyperalkaline condition, a breast reflexly irritated for many years is the seat of a lawless hypertrophy of epithelium.

A lacerated cervix may be more nearly the whole cause of cancer than any other condition. The lacerated cervix may be, by reflex influences, the cause of constipation and other disorders of nutrition and elim-

ination. The uterus shuts down on the scar of the laceration. In sympathy the rectum and colon tighten their sphincters, lose their rhythm and tone and chronic reflex constipation results. In time from faulty elimination and the resorption of putrid and toxic material from the colon, the state of hyperalkalinity is attained. The reflex irritation of the breast completes the requirements of location.

Under both the conditions of hyperalkalinity and chronic local irritation, trophic control seems to be an individual matter. Individual resistance to abnormal development of epithelium under all the requisite stimuli is still as important as individual resistance to infection.

The foregoing conclusions are based upon a clinical research of ten years in a cancer research laboratory enjoying the best facilities to be found in America. The research has been entirely clinical. The methods and instrumentation have been carefully selected from the best in use in America and abroad. They have in some instances been adapted and modified to suit the demands of a laboratory whose clientele refuse surgery and will be treated medically or not at all. The methods and results of this research have been published in part in the medical journals and in society transactions.

These conclusions are further confirmed by the results of treatment. Under constitutional treatment to remove the condition of hyperalkalinity, constipation is changed to a complete evacuation of the colon once or twice a day. The urine increases from a scarcity of 250 to 500 cubic centimeters in 24 hours low in chlorids and alkalies, to 1,500 to 2,000 c.c. with normal constituents. The blood-pressure falls to normal, the resistance rises to normal, the hemoglobin becomes normal. There is normal oxida-

tion and the temperature rises to normal. The patient often at first loses weight, then appetite returns and with proper digestion and assimilation the original weight is regained and soon surpassed. The complexion clears up and there is a general sense of well being. The swelling and induration around the tumor subside and its growth is checked. In many instances of epithelioma of the face, neck and hands, in which there is one large tumor and several small ones with many areas of senile keratoses which would become epitheliomas, the senile keratoses clear up and become smooth and the small epitheliomas disappear and heal during the process of treating and curing the larger epitheliomas.

The end compounds of the colloidal reactions between the proteid substance of the tissue cells, retained carbon dioxid and the alkalis are in a large measure irreversible and insoluble. Therefore, oxidation is a prerequisite to elimination. Oxidation is very deficient in the cancerous. In addition to the deficient oxygen carrying power of the erythrocytes, the oxidizing harmony of the ductless and sexual glands is very deficient because of age. This is all borne out by the success of treatment tending to clean out and improve the blood and increase its oxygen carrying power, and by the administration of gland extracts as indicated to supply the lack of the oxidizing hormones occasioned by the diminished functioning of the ductless and sexual glands.

These studies have led us to two fundamental conclusions:

1. The primary cause of cancer is a condition of hyperalkalinity caused by the fixation of alkalis by retained carbon dioxid.

2. The locus of the cancerous tumor is determined by a chronic irritation either di-

rect or reflex.

The "precancerous state" is the condition of hyperalkalinity stated in conclusion No. 1.

The "cancerous state" is the combination of the two which has resulted in the development of the cancerous tumor.

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RADIUM IN THE TREATMENT OF MALIGNANT DISEASE.

BY

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The use of radium in treatment of malignant disease dates back to 1905, when the late Dr. Louis Wickham, of Paris, first used the newly discovered radio-active body in the treatment of basal-celled cutaneous epithelioma—the so-called rodent ulcer. The almost magical results to be obtained from the employment of radium in this malignant growth both clinically and histologically

naturally lead to its use in other cancerous developments, and with the facilities of the first radium clinic at his disposal, Dr. Wickham gradually extended the sphere of the new agent's usefulness until he was able to speak authoritatively of its action.

Almost concurrently on this continent Dr. Robert Abbe, of New York, had been carrying on experiments, having been fortunate enough to secure a supply of the element in the early days of its discovery. As more and more radium was produced other observers in other centres gradually entered the field of radium-therapy,—Dr. Dawson Turner, Edinburgh, the cancer Research Department of the Middlesex Hospital, London, the Radium Institute in London, and various continental physicians, so that gradually a large amount of literature has accumulated, bearing upon the subject of this paper. The writer's personal experience dates back to 1907, when he studied the action and use of radium under Dr. Wickham in the Paris Radium Institute.

The action radium exerts on the tissues is due to its liberation of rays, of which there are three varieties:

1. The alpha rays, which are actually small particles of matter, positively charged, and the mass of which is four times that of an atom of hydrogen. They travel with a velocity equal to about one-tenth that of light. Their range of penetration is very short, as they are stopped relatively easily by a single sheet of paper.

2. The beta rays are electrons, negatively charged, of a mass one one-thousandth of the mass of a hydrogen atom. They travel with the velocity of light, and are of several types depending on their range of penetration. A screen of one centimeter of lead would be required to stop the hardest or most penetrating of the beta rays.

A large part of the activity of radium as a therapeutic agent is due to the beta rays.

3. The gamma rays are somewhat similar to the beta rays, but are much more penetrating and are not deflected in a magnetic field.

In addition to these three varieties of rays, radium liberates a gas called the emanation, which can be collected, and has been shown to be a true gas. This gas discharges alpha rays and loses half its strength in four days. In certain methods of application the radium emanation is made use of.

When tissues are exposed to the action of radium, certain changes occur which can be shown histologically. It may give a better idea of the *rationale* of radium therapy if these histological changes are mentioned.

The histology of the changes induced by the action of radium on the tissues was first studied by Dominici and Barcat,¹ who applied a radium plaque to the skin of a guinea-pig. In the gross a slight ulceration developed over which a crust formed, which on falling off left white skin without hair or pigment. In the epidermis there was an hypertrophy of the epithelial cells with edema, while the skin follicles, sebaceous and sweat glands underwent atrophy and were destroyed. The connective tissue bundles and elastic fibers of the corium disappeared, and their places were taken by an embryonic form of connective tissue resulting from a multiplication of the fixed cells. The final cicatrix produced showed the newly formed connective tissue bundles to be regularly superimposed, comparable to a flat fibroma with fibers and cells arranged in a regular manner.

So much for the action of radium on normal skin,—if now its effect on cutaneous epithelioma is observed, it is seen that when exposed to radium the cancer cells

gradually diminish in size and undergo atrophy. The connective tissue cells are stimulated to proliferate and as the epithelial cells are destroyed their place is taken by the newly formed connective tissue, which when healing is complete leaves a smooth, supple cicatrix.

In carcinoma of the breast, Aikins and Simon² found that the following changes took place:

1. The cells gradually diminish in size and staining properties.
2. This atrophy corresponds not to the metamorphosis of these definite formed elements, but to their destruction as shown by keratinization or absorption.
3. The epithelial cells disappear either by means of progressive absorption of protoplasm and nuclei through the leucocytic infiltration or by a sort of granular degeneration. The other processes associated with the development of every epithelial tumor are arrested while vascular connective tissue is organized.

Degrais and Bellot³ have worked out the changes induced in carcinoma of the uterus by radium. They find that the degeneration of the cancer cells and the formation of young connective tissue proceeds on practically the same lines as those described above.

In sarcomata similar changes are produced. The size of the body and the nuclei of the sarcoma cells gradually diminishes, while embryonic connective tissue cells are stimulated and develop and the sarcoma is in time changed into tissue resembling a fibroma.

Endothelial cells are apparently very sensitive to radiation. This may lead to thrombosis of the blood vessels and thus arrest the blood supply of the malignant growth. But this factor must also be considered in employing radium too close to these large blood-vessels, as thrombosis of

such a vessel might lead to very serious consequences.

Technic. Radium is employed either in the form of plaques or tubes. In the radium plaques the radium salt is mixed with an inert barium salt, and spread on a flat metal plate by means of a special varnish. This form of apparatus is admirably adapted for the treatment of surface conditions, while by the application of suitable aluminum or lead screens, effects may be produced in the tissues underlying the skin without injury to the integument itself. The other method is by the use of tubes made of silver or platinum, containing definite amounts of radium salts from a few milligrams to several centigrams. Such tubes can by means of an incision be inserted into tumor masses, or be brought into contact with malignant growths through the natural body orifices, mouth, rectum, vagina, etc.

Where one has access to a large amount of radium, therapeutic use can be made of the emanation, which as mentioned above is a gas which is constantly being produced by the radium atom. This gas can be collected over mercury and hermetically sealed in small capillary tubes. These tubes can then be used in the way described above. As they lose half their strength in about four days' time immediate use must be made of such radium emanation tubes. The advantage, of course, is that from a fixed quantity of radium, which is itself in no wise diminished, an unlimited number of radium emanation tubes can be prepared, and thus the one supply does for a great many cases at the same time. The recent report of the London Radium Institute would indicate that increasing use is being made by the profession of this method of obtaining radium emanation.

As regards the measurement of radium dosage no fixed policy as yet exists. The milligram-hour method of Dawson Turner finds considerable favor. The milligram-hour is determined by multiplying the number of milligrams of radium by the number of hours during which it is employed. Thus 20 milligrams for 2 hours would be a dosage of 40 milligram-hours as would the use of 5 milligrams for 8 hours. Many objections can be raised to this method of measurement on scientific grounds, but as yet it is probably the most convenient method of expressing the dosage.

In practice one finds that familiarity with various strengths of applicators, enables one to gauge the duration of time a particular apparatus must be used to secure a certain effect.

Rodent Ulcer. This is the lesion which of all the malignant growths responds best to radium treatment. It was in the treatment of rodent ulcer that the action of radium on cancer was first studied and the way paved for its more extended use. All authorities agree on the ready response of the rodent ulcer, as a rule, to radium radiation, and also on the conditions which may prevent a perfect result.

The rodent ulcer of not too long standing, where the skin alone is involved and previous physical agents as X-ray, ionization, solid CO₂, have not been used, will heal in about six weeks' time following the application of a plaque containing 2-5 milligrams of radium per square centimeter for from six to twelve hours. A fairly severe reaction follows such an application, as evidenced by redness and edema of the part with subsequently the formation of a crust. Continued experience has lead the writer to adopt this destructive method of strong dosage in the treatment of these

lesions, less intensive radiation may result in a healing over of the ulcer, but recurrence is apt to take place.

Against a favorable prognosis in the treatment of rodent ulcer is the fact of previous treatment by other physical methods. Repair and epithelialization is very slow and the newly formed scar is very apt to break down. Involvement of bone, cartilage or mucous membrane is another unfavorable factor, and should warn one against giving too definite an opinion as to the outcome.

Epithelioma of the Skin. Squamous celled epithelioma of the skin if treated while it is limited to the skin, and has not involved the underlying deep tissues or adjacent lymph glands responds to heavy dosage with radium almost as well as the rodent ulcer. If there is not much subja-cent infiltration, treatment can be carried out as for the rodent ulcer. Should there be much infiltration more prolonged treatment should be given. The apparatus is screened sufficiently to pass only the ultra-penetrating rays, that is, the hard beta and gamma rays and a dosage of from sixty to one hundred hours exposure given. If ulceration has taken place and the edges are hard and everted the result may often be hastened by a preliminary curettage of the fungating tissues.

In this condition also, treatment by the combined method of operation and radiation is often most effective. Let the surgeon excise the growth as far as practicable, and follow up this step by very heavy radiation over the whole of the affected area with the least possible delay. There is no doubt that in this way the prognosis is infinitely strengthened.

Cases: Rodent Ulcer of the Temple. Male aged 55. The disease had been present for two years, but he had only consulted a physician three weeks before. In front

of the left ear was a roughly oval lesion about $1\frac{1}{2} \times \frac{3}{4}$ in. in area. The edge was hard and beaded. Under novocaine the thickened edge was curetted. An exposure of 12 hours to the radium plaque was given. Two months later the patient wrote that complete healing had taken place.

Epithelioma of the Cheek and Eyelid:

A man aged 62, presented a lesion which began in June, 1914, as a small lump on the left cheek just below the eye. It had gradually increased in size, and at the date of examination was as large as an almond nut. It had involved the lower eyelid and the latter was retracted somewhat. The mass was curetted and radiated. In six weeks the patient reported, and the ulceration had quite healed, leaving a smooth scar with no evidence of the epithelioma present.



FIG. I. Epithelioma of the lip. Before treatment.

Epithelioma of the Lip: This condition in selected cases responds well to radiotherapy. What determines the selection is the depth of tissue involved by process. So long as the mucous membrane of the lip alone is affected radium will destroy the growth and a smooth soft scar will result. Contra-indications to radium are extension of the process to the sub-mucous tissues, to the mucous membrane of the mouth, or evidence of metastases in the neighboring glands. Surgical treatment should be advised in such instances.

The following cases will show what ra-

dium will do in the treatment of this condition.

A man, aged 55, had noticed a small ulcer on the middle of the lower lip three years before. This disease had been allowed to progress until at the date of first observing time almost the whole of the red surface of the lower lip was involved, and presented a central ulcerated portion surrounded by a hard beaded margin. There were no palpable glands. (See Fig. I). The thickened margins were curetted, a heavy exposure to radium was given, which was followed by a fairly severe reaction. When seen two months later the lip was quite healed, there was no thickening present, and the disease appeared to be quite eradicated. (See Fig. II).

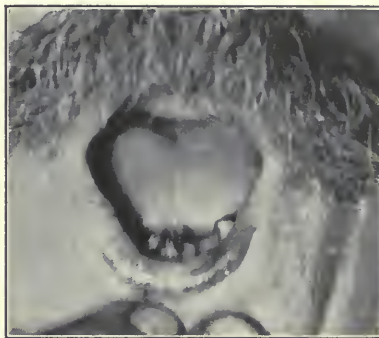


FIG. II. After treatment by radium. The lip is healed and smooth.

Another case was in a man aged 77, who presented an epithelioma on the left side of the lower lip, which had been present for six months. He was paralyzed and in a very feeble state of health, so that operative procedure was not entertained by his family physician. The lesion was cauterized but no improvement resulted. When first shown it presented the appearance shown in Fig. III. There was an ulcer as large as a ten cent piece, with indurated base and edges. No glands could be palpated. It was radiated for 12 hours with a plaque containing half a centigram of radium. In ten days a crust had formed, and when it detached itself in about six weeks' time the lip was perfectly healed. (See Fig. IV).

When we come to consider cancer inside

the mouth, including that of the buccal mucous membrane, tongue, palate, and pharynx, not quite such an optimistic attitude can be adopted, and one would hesitate to speak of radium as a cure. Nevertheless, as perhaps the most effective way of treating such lesions, radium occupies first place, for retardation and retrogression of such growths will occur under its influence.

In the latest report of the Radium Institute,⁴ London, 11 cases were reported improved out of 33 cases treated. The report is a most conservative one, and some of the

sive radiation of the area with the penetrating radium rays, makes the prognosis that much more favorable. Several such cases have occurred in the writer's practice and this experience is borne out by other observers.

Temporary relief and a widening of the lumen may be expected when the esophagus is the seat of a new growth, causing its obstruction, but more can not be anticipated.

Cancer of the Uterus: The results obtained from the use of radium in the treatment of inoperable uterine carcinoma form



FIG. III. Epithelioma of the lip. Before treatment.

cases reported "improved" might with reason be regarded as "cures."

It would appear from recent reports that small tubes filled with radium emanation and buried in the cancer nodule have proved the most effective means of controlling these cases. This method obviates what formerly had been the greatest difficulty to overcome, the inconvenience amounting to distress caused the patient by the necessity of holding various forms of radium apparatus inside the mouth.

As a prophylactic against recurrence after excision of neoplasms in this situation radium should be used in every case. There appears to be no doubt whatever that inten-



FIG. IV. Same case as Fig. III after treatment by radium.

one of the most satisfactory chapters in the subject of radiotherapy. Sufficient work has been done both on this continent and in Europe to prove beyond question the invaluable benefit to be derived either as a means of treating inoperable cases, or to treat local recurrences following operation, or as a prophylactic after extirpation of the uterus.

Carcinoma of the cervix presenting a fungating bleeding mass with a foul discharge, which exhausts the patient both by the loss of blood and the pain it causes, responds most effectively to prolonged exposure to radium which may be carried out by enclosing tubes of radium in rubber and

packing the instrument into the vaginal vault. The analgesic and hemostatic properties of the substance are most strikingly demonstrated here, and the improvement soon manifests itself in the patients. The growth itself is retarded if not entirely arrested by the destruction of the cancer cell, with subsequent fibrosis, so that a firm cicatrix results. The histological changes have been fully studied by Degrais and Belot, of Paris, and prove beyond doubt the power of radium to destroy the cancer cell in this situation.

While one hesitates to use the word "cure," yet Abbe has reported one of his patients to be in perfect health eight years after radium treatment of a carcinoma of the cervix. Even the London Radium Institute reports one case of "apparent cure," and 17 much improved. This experience is confirmed as well by continental observers. The following cases will show what may be accomplished.

A patient seen first four years ago suffering from a carcinoma of the cervix; operation had been refused by one surgeon who gave her six weeks to live. There had been a great deal of hemorrhage. A second surgeon curetted but gave no better prognosis. Radium was used more or less experimentally, with a result that exceeded all expectations. The bleeding ceased almost from the first, the patient put on weight and was able to be about her ordinary duties. Lately there has been a very marked fibrosis of the part. After four years she is enjoying good health, has no bleeding, looks better and weighs more than she ever did before.

A second patient presented an inoperable carcinoma of the cervix. There was a history of occasional bleeding ever since the menopause six years before, but she had not consulted her physician. After using radium the bleeding and ulceration ceased and the progress appears to be definitely arrested.

Here as elsewhere in the treatment of

malignant disease radium is not to be regarded as a means of replacing operative treatment. The indications for its use are:

1. In inoperable cancer, either from the extent of the disease or the physique of the patient.

2. Where complete surgical removal cannot be effected, it should be used after such palliative procedures as are indicated have been performed, such as curettage or amputation of the cervix.

3. In recurrence of the process in the scar or vaginal walls, following hysterectomy. Further operation in these cases often hastens the spread of the disease.

Cancer of the Breast: In cancer of the breast radium occupies a most important place as a means of arresting progress in inoperable cases, and as the most effective method of destroying the small isolated nodules which are apt to recur in the skin after operation has been performed. Experience has shown too that where a heavy radiation has been given following operation, recurrence is certainly less. In cases where every indication was that the disease would soon reappear, either in the axillary glands or in the chest wall, such has not been the case where radium was used after the removal of the breast. Heavily screened plaques, so that only the more penetrating rays are effective, form the best method of treatment. Where large masses exist, the burying of tubes of radium through incision into the tumor will often result in very definite shrinking in size of the mass, which at the same time undergoes fibrosis.

In a patient seen recently there were several cutaneous nodules found over the breast area following operation about eight months previously. These quickly subsided following the application of a plaque containing 1 centigram of radium, for 12 hours, heavily screened.

Another patient three years ago had a recurrence in the right axilla following removal of the breast twelve years before. This mass was removed but not entirely.

She was immediately subjected to heavy radiation and there has been no recurrence. Curiously enough one year ago cancer developed in the other breast. This was removed. At operation the axillary glands of that side were found affected. Post-operative radiation was given, and no return of the disease has manifested itself.

Cancer of the Rectum: In inoperable cases of this disease the proper use of radium is often of great benefit. It would appear that the soft vascular growths respond better than the hard indurated plaque type. A preliminary colostomy is often advisable. The reaction of the radium may in some cases cause a certain amount of proctitis, but patients differ very much in this respect. The best method of treatment is by means of tubes, well screened, so that gamma and hard beta rays are emitted. The tubes are passed up the rectum so as to lie in contact with the growth. At the same time well screened plaques may be applied externally over the sacrum, and a "cross-fire" action may thus be induced. Growths treated in this way sometimes show a marked shrinkage, and those formerly considered inoperable may so decrease in size that their surgical removal may be effected.

Cancer of the Bladder: A certain amount of success has attended the treatment by radium of this condition. From the London Radium Institute six cases have been reported treated of which two gave gratifying results. In these the hematuria, cystitis and subjective symptoms disappeared while cystoscopic examination showed a diminution in the size of the growth and the covering of the ulcerated surface by healthy epithelium. The radium is applied by means of a tube fastened in a catheter, with a window directed against the growth. To secure "cross-fire" other tubes may be placed in the vagina or rec-

tum if the growth is on the base of the bladder, or on the anterior abdominal wall if the anterior vesical wall is involved.

Cancer of the Prostate: The use of radium in cancer of the prostate diminishes or abolishes hematuria, lessens pain, and decreases the size of the growth. When possible the radium is applied by catheterization, the radium tube being in the "window" of the catheter. In addition other tubes may be made to act on the prostate through the rectum. Pasteau and Degrais⁵, of Paris, have reported considerable success by carrying out treatment in this way, and state that a prostate preliminary inoperable may be reduced to such an extent that prostatectomy may be performed without danger.

Cancer of the Stomach and Intestine: While a certain amount of work has been done in the treatment of cancer in these situations, it must be confessed that the results as yet have been very barren. Through an artificial anus or gastrostomy opening radium tubes have been brought into contact with the disease. Gaultier and Labey introduced radium through the opening left after gastro-enterostomy and applied it to the pylorus, using at the same time a screened plaque over the abdomen, so as to produce "cross-fire." The patient's health improved after the treatment, and eighteen months later he was still much better in a general way. Not many observers have reported such success.

Sarcomata: Radium has an extensive field in the treatment of sarcomata and certain types of growth respond most favorably to the influence of the rays. Histologically the effect of radiation has been mentioned. Clinically most observers are agreed that the round-cell sarcoma is the most susceptible, tumor masses disappear-

ing within a few days of exposure to radium. Melanotic sarcomata can be destroyed locally but the use of radium has no influence on metastases which unfortunately develop sooner or later. The spindle-celled variety in many cases respond well. According to Morson⁶ the result obtained in these cases depends on the origin of the growth. He claims that if growing from tissues other than bone, as satisfactory results may be obtained as in the round-celled.

Vigorous treatment must be pursued, and where possible the method of burying tubes in the tumor mass is to be advocated. Combined with this, plaques may be applied externally so that a heavy "cross-fire" is obtained.

Here as elsewhere radium is not to be regarded as a substitute for operation when the latter is feasible. The combination of radium and surgery may give excellent results, or the former may be used alone when operation is contra-indicated.

CASES:

1. A spindle-celled sarcoma developed at the side of the anus in an infant a few months old. The mass had been removed twice by operation but immediately recurred. Radium was then used with most gratifying results, as the growth was converted into firm fibrous tissue. This was five years ago and the child is now a fine healthy boy.

2. A young man 22 years of age was sent to me by a surgeon who reported that the patient was suffering from a small round-celled sarcoma involving the left sacro-iliac joint. The mass was so situated that it was impossible to remove it all. However, as much as possible was excised. A sinus was left leading down to the joint and into the growth. Radium was inserted in this sinus and a very heavy radiation given. The changes expected occurred and the sarcoma was gradually converted into hard fibrous tissue. Sections cut from the walls and base of the sinus six weeks later showed no evidence of sarcoma tissue. The sinus gradually closed up and the patient is—

eighteen months later—pursuing his usual duties.

3. A case of spindle-celled sarcoma which developed on the soft tissues of the thumb in a young man aged 27. The mass was excised but recurred and when first seen by me there was a mass two inches long by one-half inch wide, ulcerated with a rather firm fibrous base and edges. Heavy radiation was given, with the result that the growth was arrested. The sarcoma tissue was converted into normal scar tissue, softer and more freely moveable on the underlying parts. Epithelialization, however, would not take place and a condition of chronic ulcer appeared to have developed. It was decided to skin graft. This was successfully accomplished, and the part is now quite healed with no evidence of new growth present.

The endeavor has been made in this paper to present the subject of the employment of radium in malignant processes in a frank and impartial manner based on the experience of others, as well as the writer's. To-day no one can deny that radium has accomplished much. It has not accomplished all that over-zealous enthusiasts expected of it in the early days of its employment. The recognition by the surgeon that radiotherapy does not deprive him of his sphere in the treatment of new growths, but rather is an auxiliary which enables him to secure better results by the prevention of recurrences has been gradually brought about. When operation is impossible or is refused radium offers the opportunity to arrest in some cases, delay in others, the progress of the disease with relief of distressing symptoms. In skin cancer radium is undoubtedly the most satisfactory agent we have at the present time, and its use in such cases is amply warranted by the experience of observers the world over.

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CARCINOMA OF THE APPENDIX, A PLEA FOR ITS REMOVAL WHENEVER THE ABDOMEN IS OPENED.

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In reporting a case of primary carcinoma of the appendix it has seemed a good opportunity to draw attention again to the advantage of removing the organ whenever the abdomen is opened without reference



FIG. 1. Carcinoma of the appendix. Drawing of first case, reported in 1902 showing a tumor at the tip.

to whether or not there have been symptoms pointing to its disease.

Formerly carcinoma in this region was looked upon as a very rare condition and

as recently as 1902¹ examination of the literature showed only 13 authentic cases on record. Since then the practice of routine microscopical examination of appendices as carried out in many laboratories has shown that the condition is not so uncommon. One group of 5,000 cases reported on by McCarty and McGrath showed carcinoma to occur once in every 225 cases of chronic appendicitis. In our records of three hospitals covering a number of years with the examination of about 2,100 appendices carcinoma has been found 4 times. In each instance the condition had not been suspected and only one of the specimens



FIG. II. Carcinoma of the appendix. Sloane Hospital for Women, Path. No. 1599. Tumor occupying outer two-thirds of a normal looking organ.

presented in the gross an appearance that would suggest tumor formation. (See Fig. I).

While the clinical course of carcinoma in this region points to a rather slowly growing and not very malignant type of tumor, it is hard in a condition so recently recognized to tabulate statistics. It is also probable that with the present tendency both on the part of the profession and the laity to have all appendices removed which give symptoms, a large percentage of cases with carcinoma

¹ Primary carcinoma of the appendix, D. S. D. Jessup, *Proc. N. Y. Path. Soc.*, May, 1902, Vol. II, No. 4.

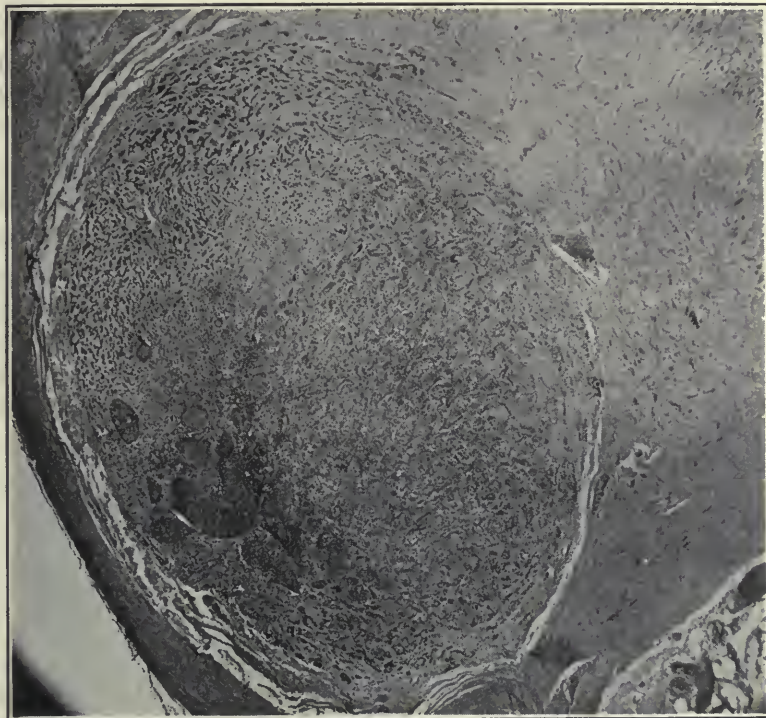


FIG. III. Low power photograph of transverse section near the tip of appendix shown in Fig. II. The lumen is obliterated and the carcinoma has extended out to the serosa.

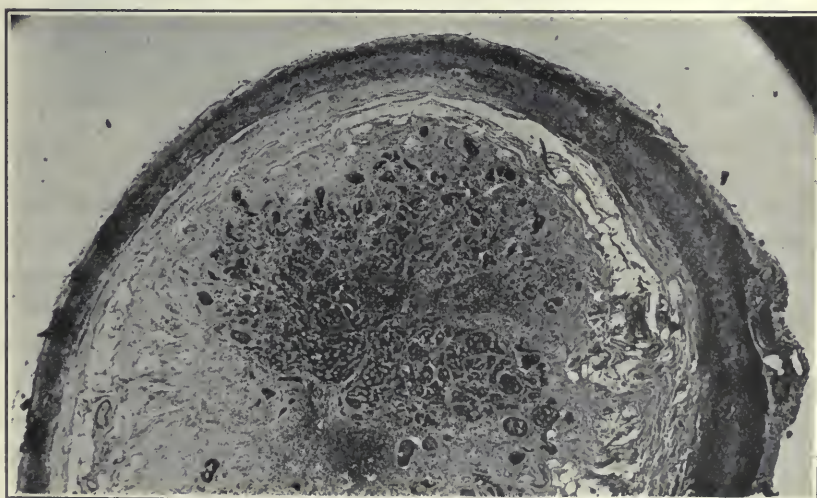


FIG. IV. A section similar to that given in Fig. III, but taken nearer to the proximal end of the organ.

get operated on early enough to prevent invasion of adjacent structures. We certainly hear of very few cases with extension outside the appendix.

The comparatively early age at which carcinoma occurs here has been noted. In about half of the cases it is under 30 years.

The case here reported occurred in the service of Dr. E. B. Cragin at the Sloane Hospital for Women, the operation taking place March 25, 1915. The patient, a woman of 28 had had a previous operation for some

pearance is that of a chronic obliterating appendicitis, except that the color is yellow, after formalin hardening, instead of the usual white. The proximal portion appears normal with a patent lumen.

Microscopical examination. Sections through the distal portion show absence of lumen, the mucosal structure is lost and there is instead a growth of dense connective tissue in which lie well defined nests and strands of moderate sized cells. (See figures III, IV and V). These cells have in-

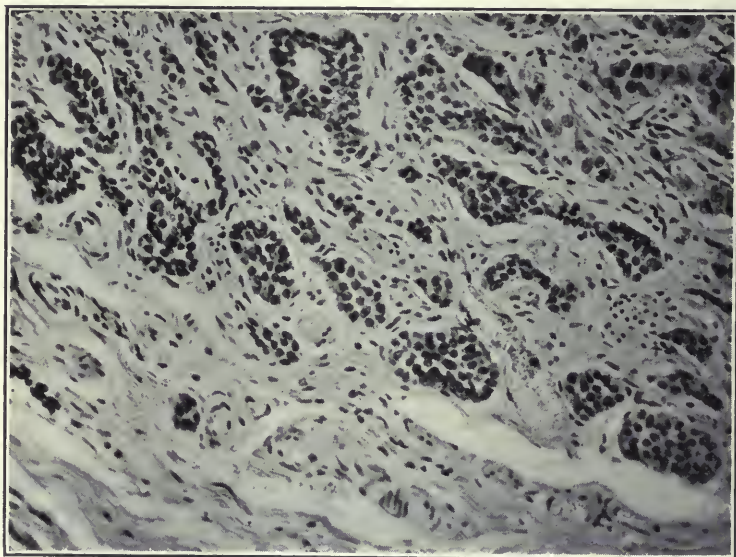


FIG. V. High power view of the new growth invading the appendix shown in Fig. II.

condition of the fallopian tube, her present trouble was diagnosed as appendicitis and she had had five attacks. At the time of the operation the appendix appeared normal except that the vessels of the serosa were somewhat engorged.

Pathological examination No. 1599. (See Fig. II). The appendix is 6 cm. long and 8 mm. thick and of uniform caliber. The vessels of the serosa are prominent. On section in the distal portion for a distance of 4 cm. the lumen is obliterated and the ap-

vaded the muscularis outwards to the serosa. There is not the picture of an adenocarcinoma seen so often in tumors of the large gut but more the appearance of a medullary or scirrhus cancer such as is seen in breast tumors. The type of tumor seen in our first case was adenocarcinoma and the cases described have most of them been of that variety. Our second case showed the scirrhus type.

It is interesting to note that the history of appendicitis is recorded at times and that

in our case there had been five attacks. The question arises whether, as in other regions of the body, chronic inflammatory changes here may not be the precursor of carcinoma. The gross appearance as has been stated is that of chronic inflammation. The chronic obliterating changes so often seen at the tip of the appendix where it has been removed as a matter of routine in abdominal operations and where there have been no symptoms, suggest an atrophy or process of involution rather than true inflammation but such cases too may furnish ground for the development of a new growth.

What then should be the attitude of the surgeon with regard to the removal of innocuous looking appendices? The gynecologists have come more and more to make it a regular part of their operative procedure whenever the abdominal cavity is opened. The progressive increase from year to year in the number of appendectomies in hospitals for women is witness to this fact. The ordinary plea for such removal has been that it removes all chance of later attacks of appendicitis and where microscopical examination has been practiced it has been found that many normal looking appendices are materially changed. If in addition we consider that in from 2 to 4 out of every 1,000 appendices there will be carcinomatous changes and this without reference to age of patient, appearance of the organ or history of trouble, there seems to be very good reason for urging the removal whenever there is opportunity.

The drawings and photographs were made by Mr. K. K. Bosse.

A Valuable Carminative.—Oil of cajuput is one of the least used, and yet one of the most efficient carminatives.—*Med. World.*

ACCIDENTS FROM MOTOR VEHICLES IN NEW YORK CITY FOR FIRST FIVE MONTHS OF YEAR 1915.

BY

JOHN W. WAINWRIGHT, M. D.,

New York.

There has been much speculation among the citizens of New York City as to the number of accidents occurring from motor vehicles, the proportion of fatal cases compared with the total number and such other information as might lead to corrective measures. We have had access to the records kept by the Department of Police of the city which we give below in tables, non-fatal and fatal, together with ascertainable direct cause for the first five months, or from January 1st to June 1st inclusive. While these figures are distressing, it cannot be said we think, that they are excessive when we consider the number of motor vehicles upon our streets, not only those belonging to residents but the large number of those constantly among us owned by persons, residents of towns near by to New York City, and in fact from sections throughout the country from Maine to California and from Michigan to Texas; sight-seers, tourists, visitors and on other errands. We had in New York City on June 1, 1915, a total of licensed motor vehicles numbering:

Privately owned autos, public	
busses and taxicabs	72,189
Trucks for commercial purposes.	12,178

When we realize the narrowness of our streets, the obstructions presented by building and street improvements, and especially the construction of our new subways, and further consider that our streets are the only playgrounds for our hundreds of thousands

TABLE No. I.

Non-fatal Accidents—Struck by Motor Vehicles,
From January 1 to June 1, 1915,
New York City.

	Passenger auto	Truck	Motorcycle	Total
Total No. accidents....	1,551	409	137	2,097
Total No. injured.....	1,582	412	141	2,135

of children we will not be so amazed at the number of accidents from motor vehicles, startling as the figures appear to those of our own citizens and especially those of other cities throughout the country who do not know or realize the conditions under which we are necessarily forced to live.

Others factors, such as a disposition for many drivers to exceed the speed limit,

TABLE No. II.

Fatal Street Accidents,
From January 1 to June 1, 1915,
New York City.

	Struck by			Injured in		
	Auto vehicle	Horse truck	Electric street car	Collisions and other accidents to vehicle	Fall from vehicle	All vehicles, fatal accidents
Total deaths from injuries...	116	31	34	51	25	257

ignorance of our traffic regulations, the immense trucking constantly in evidence and the personal disregard of the danger to life in crossing the streets, boarding and leaving passenger vehicles, both among our

TABLE No. III.

Non-fatal Accidents—Vehicular,
First Quarter for 1915,
New York City.

	Struck by										Injured in		
	Motor drawn					Horse drawn							
	Passenger	Truck	Motorcycle	Passenger	Truck	Electric street car	Railway train	Bicycle	Other vehicles	Collisions and other accidents	Runaways	Fall from vehicle	Saddle horse
Number of accidents.....	745	240	45	45	450	436	2	37	5	558	87	574	4
Number injured	766	243	50	46	454	439	2	38	5	679	106	579	4
Carelessness of injured.....	269	94	12	19	178	215	2	8	1	16	1	280	1
Going to or from school.....	50	17	1	1	36	19	.	.	.	1	...	5	1
Defects of vehicle	3	...	...	...	2	...	...	...	...	26	10	18	.
Carelessness of driver.....	9	3	5	2	6	1	.	...	.	31	1	1	.
Other causes	2	1	...	...	3	2	.	...	1	18	...	18	.

Carelessness of injured persons include improper riding on vehicles; crossing street not at crossing; playing in the street; improperly boarding or alighting from vehicle, walking or standing in street; running in front of vehicle; fall under or from vehicle; turning vehicle; intoxication (87); crippled or deaf, etc.

Defects in vehicles include brakes, wheels, breaking, tire blowout, etc.

Carelessness of driver include speeding, intoxicated, wrong side of street, turning corners, lights out, backing and reckless driving.

Other causes include defective street and lighting; rain on wind shields; starting, unmanageable vehicle, etc.

resident citizens and our visitors, enter largely into an inevitable and deplorably long list of accidents, fatal and otherwise.

And again the figures of record are not to be taken as representing the actual number of accidents either fatal or non-fatal, for all cases are not reported to the Police Department. An accident may occur on some highway not so carefully patrolled as our more generally used streets and avenues, and not come to the notice of the patrolman; or an accident may be considered at the time a trivial one, but be followed later by serious

results. The chauffeur in many instances will endeavor to suppress an accident for which he is more or less responsible, and there are those who object to being reported injured because of a desire not to distress family or friends. These are only part of the causes that interfere with determination of the actual total casualty list.

As will be seen there were but 116 persons killed, to 2,135 injured in accidents, from auto or motor vehicles including passenger, trucks and motorcycles, or a trifle over 5 per cent. deaths of those reported in-

TABLE NO. IV.
Fatal Street Accidents,
First Quarter, 1915.¹

	Struck by			Injured in		
	Auto vehicle	Horse truck	Electric street car	Collision and other accidents to vehicles	Fall from vehicle	All vehicle accidents
Total injured	56	13	16	6	12	103
<i>Causes of accidents:</i>						
Accidents at crossing or causes not indicated	29	7	6	4	4	53
<i>The injured person:</i>						
Skating behind vehicle	1	..	..	..	1	2
Riding behind vehicle	1	1	..	..	1	3
Crossing street not at crossing....	15	2	5	..	..	22
Crossing street not at crossing on way to school	3	..	..	..	..	3
At play in street	1	1	..	..	..	2
Fall from vehicle under same....	1	..	..	..	..	1
Walking into vehicle	2	2	..	..	..	4
Fall against vehicle	1	..	..	..	..	1
Jumping from vehicle .....	..	..	..	..	1	1
Intoxicated .....	..	..	4	..	..	4
Crippled .....	..	..	1	..	..	1
Going to or from school.....	3	2	..	..	..	5
<i>Vehicle:</i>						
Wrong side of street	1	..	..	..	..	1
Driver intoxicated	1	..	..	1	..	2
Horses unmanageable .....	..	..	..	..	1	1
Steering gear defective.....	..	..	..	1	..	1
Pole loose .....	..	..	..	..	1	1

¹The above figures are for first quarter only; the complete figures for April and May not being available. They are given, as are those in Tables numbered III, V, and VI to show the details of the classification of class and causes of injuries.

jured. Fatal results from other causes than those from auto vehicles increase the total fatal street accidents here enumerated to 257. There are other causes of injuries not given in the above tables, such as railway trains, bicycles, horse drawn passenger vehicles, runaways, saddle horses, etc. But as we are here attempting to give information concerning injuries received by and deaths

due to accidents from motor vehicles, we will not attempt to analyze the latter.

However, it will be found interesting to study the classified list of non-fatal street accidents from all manner of vehicles and other causes in New York City for the first quarter of this year 1915. Complete figures for the months of April and May were not found available. Those at hand, however,

TABLE No. V.
Non-fatal Accidents—Struck by Motor Vehicles,
First Quarter, 1915.¹

	Passenger auto	Truck	Both
Total accidents	745	241	986
Total injured	766	244	1,010
Accidents at crossings, or causes not indicated...	436	133	569
<i>The injured person:</i>			
Riding behind vehicle	6	5	11
Crossing street not at crossing.....	203	55	258
Crossing street not at crossing on way to school..	13	8	21
Playing in street	4	6	10
Skating in street	3	2	5
Alighting from vehicle	2	3	5
Improperly boarding street car	1	1	2
Pushing cart .....	...	2	2
Running into vehicle	16	4	20
Coasting	1	...	1
Fall under vehicle	1	1	2
Working in street	2	...	2
Cranking vehicle	1	...	1
Intoxicated	9	3	12
Crippled	5	4	9
Deaf	2	...	2
Going to or from school	37	9	46
<i>Vehicle:</i>			
Skidding, total	26	10	36
Wet and slippery street with tire chains or non-skid tires	9	...	9
Snow or ice on street, with tire chains or non-skid tires	6	1	7
Wet and slippery street without tire chains or non-skid tires	7	6	13
Snow or ice on street, without tire chains or non-skid tires	1	2	3
Cause not given	3	1	4
Wrong side of street	4	1	5
Speeding	1	2	3
Driver intoxicated	1	...	1
Brakes defective	2	...	2
Broken wheel	1	...	1
Vehicle lights out	2	...	2
Vehicle backing	1	...	1
Towed vehicle	2	...	2
Breaking through road plank .....	...	1	1

¹The above figures are for first quarter only, those for April and May not being available.

show a proportionate increase over those given for January, February and March; and this will be understood for the reasons that there are many more motor vehicles, pleasure and business, on our streets during the pleasant weather of the spring, summer and fall than in the cold winter months.

We now come to some highly interesting figures concerning the number of arrests for speeding automobiles and motorcycles, and the amount of fines collected therefrom, in New York City from January 1st to June 1st, 1915.

Number of drivers of automobiles arrested for speeding, 3,050; 36 of whom were sent to prison. Fines were collected from those arrested to the amount of \$62,540.00.

Number of motorcyclists arrested for speeding, 220; 2 of whom were sent to prison. Fines were collected from those arrested to the amount of \$4,225.00, making a

total of \$66,765.00.

These figures are, as above stated, interesting in showing that the city police are vigilant in an effort to correct or control the abuse of speeding; and that our city magistrates in imposing fines to abolish this highly injurious nuisance are alive to the need of disciplining offenders.

Our competent commissioner of police has placed on the streets a number of officers in citizens' clothes in high power automobiles to act as a patrol. They are instructed to warn drivers who exceed the speed limit, reporting to headquarters names of the drivers and the number of the license of the cars, to be used in cases of arrests and prosecution upon repetition of the offence. They will give instructions regarding the approach to crossings or street intersections, as well as turning into cross streets or avenues, the proper side of the street upon which to drive, etc.

TABLE No. VI.

Summary Table No. 1.

Non-fatal Accidents—Vehicular.
Classified by Nature of Accident.

Nature of accidents	Accidents				Persons injured			
	Jan.	Feb.	Mar.	First Quarter	Jan.	Feb.	Mar.	First Quarter
Struck by vehicle:								
Railroad train .....	...	1	1	2	...	1	1	2
Electric street car	113	146	177	436	113	149	177	439
Motor vehicle:								
Passenger	265	201	276	745	275	206	285	766
Truck	87	62	91	240	89	63	91	243
Motorcycle	7	15	23	45	7	17	26	50
Horse drawn:								
Passenger	11	11	23	45	11	11	24	46
Truck	118	131	201	450	120	132	202	454
Bicycle	6	13	18	37	6	13	19	38
Other vehicles .....	...	...	5	5	...	...	5	5
Saddle horse	2	1	1	4	2	1	1	4
Injured in:								
Fall from vehicle	196	158	220	574	197	159	223	579
Runaway	25	22	40	87	31	27	48	106
Collisions or other accidents	159	185	214	558	202	218	259	679
Grand total	989	946	1,293	3,228	1,053	997	1,361	3,411

Figures for first quarter only available.

This measure of education should prove highly useful.

It is not the purpose to harass drivers or to be unduly severe, therefore the innovation should be welcomed and the advice given, gratefully accepted and complied with.

A further measure for facilitating traffic and avoiding accidents is being worked out to signal ahead for several blocks on the most congested thoroughfares instead of as at present at intersections only. It is believed that greater security to pedestrians, as well as in the crossing of vehicles will result.

In conclusion, I wish to thank the officials of the Police Department as well as those of the Secretary of State and the National Highways Protective Society for their courteous and valuable assistance in securing the above information.

THE ANNOTATOR

Flies and Infant Mortality.—The fact has been borne in on the minds of the profession and laity alike that insects play a conspicuous rôle, in some circumstances the principal part, in the spread of many diseases. This is most obviously the case so far as flies are concerned. The season of the year has come when flies abound; that infant mortality reaches its highest point at this time



is far more than a coincidence and it is a truth proven beyond peradventure that flies are largely responsible for the annual holocaust of infants. Recently, the Department of Health of New York has been pursuing investigations with the object of determining the extent to which the fly is a factor in infant mortality and sickness in hot

weather. The conclusions reached as a result of these very carefully conceived and carried out investigations were that almost twice as many infants were attacked by diarrhea among fly-exposed as among fly-protected infants, and further that the combination of flies and dirt was a still more deadly menace to babies. Almost two and a half times as many fly-exposed infants were attacked by diarrhea in dirty homes as in clean ones. Efficient measures of protection against flies in tenement houses are maintained with great difficulty, although screening each infant by itself by the use of netting has been found to be a fairly dependable means of keeping flies away. Ordinary screening of the windows in the tenements is far from effective for many reasons. Realizing, therefore, that the fly is perhaps the greatest menace to infant life and health, a vigorous campaign against these disease and dirt bearing insects, especially in cities, would seem to be as urgently called for as the campaigns against cancer and tuberculosis, especially since a strenuous fight against the fly properly conducted bids fair to bring about results so substantial and far reaching in effect. The hot weather slogan should be "death to flies to save our infants' lives."

Charity Abuse Again.—The discovery that one of the patients at Bellevue Hospital was worth \$15,000 or more, and was getting or attempting to get the benefits of that institution at the expense of the taxpayer, has again brought up the matter of medical charity—a subject which perennially causes a lot of talk and little action. Why is it that some definite course cannot be taken to curb the unwarranted imposition upon not only the public but also the medical profession?



According to carefully estimated figures by Dr. C. J. Whalen, of Chicago, each practising physician in that city is deprived of no less than \$2,500 a year in possible fees by the senseless manner in which uncalled for charity is dispensed. Doubtless, on the same basis, the figure would be equally large in New York City or, for that matter, in

any other large city. In any event, the maintenance of the Bellevue and allied hospitals costs the taxpayer nearly \$2,000,000 a year!

Our attention was recently called to a suggestion made in the editorial columns of the *New York Evening Mail*, which we believe is well worthy of putting into immediate practice: "In justice to the taxpayers, every patient treated, every person cared for in any institution, ought to be billed for the cost of the service rendered. These bills should go to the Bureau of Social Investigations, which has been formed in the Department of Charities, and the director of that bureau should be empowered to cancel the charge if the patient is properly entitled to public charity, or to forward the bill to the corporation counsel for collection if the person is able to pay and does not settle directly with the department. This may seem like putting a hard face on kindly charity, but it is nothing of the sort. It is simply taking steps to protect the taxpaying public from imposition."

The Increase of Mentally Defective Children.—Unfortunately, owing to the conditions which prevail in civilized countries, the number of mentally defective children is increasing constantly. In those lands in which commerce and industry are most conspicuous and in which the population is massed together in confined spaces, mental deficiency in childhood is most obvious. But as the tendency of all countries seems to point to the aggregation of the population into cities, so the prevalence of mental deficiency in childhood cannot but increase. This may appear to be a gloomy view to take of the situation, but it is certainly one that appears warranted by the facts.

Dr. Helen MacMurchy, of Toronto, Inspector of Auxiliary Classes for Ontario, has prepared recently for the Department of Education of Ontario, a comprehensive statement concerning the organization and management of this work. One might be disposed to imagine that in a sparsely inhabited strictly rural country, such as Canada, that mental deficiency among children would be conspicuous by its absence. But this is not the case, and in proportion to its population Canada has its full share of

these young defectives. Dr. MacMurchy has made a special study in various parts of the world of the most effective methods of treating such children in order that they may become as largely as possible self supporting members of their communities. In this valuable report by Dr. MacMurchy, she sketches the evolution and establishment of auxiliary classes, and shows how in Ontario she has put into practice with excellent results the knowledge she has gathered from many sources. The whole book is extremely interesting to those who are giving any thought to this problem presented by weak-minded or backward children.

Extending the Use of Local Anesthesia.

—In a recent issue of the *Bulletin of the Medico-Chirurgical College of Philadelphia* a letter from the war zone contained a statement which may be of interest to some of our surgical readers. C. S. Pancoast, writing from a large hospital in Budapest where he is serving, makes an incidental but quite remarkable statement regarding the anesthetic used there:

"In my hospital all operations, *with no exceptions*, are done under local anesthesia—with novocain 2%. They mostly depend upon infiltration of the novocain, as much as 150 cc. being used hypodermically, intra-fascially and muscularly in a normal-sized man. So far I have not witnessed a single failure with it, and no deleterious after-effects. Only conservative surgery is done, and the mortality even in the worst cases which come here has been less than 3% in a hospital of 1,200 beds. It is wonderful to witness the cures under such treatment."

We are not informed of the reason for this change in technic; it may be that the supplies of ether and chloroform are running low in Austria-Hungary, but it is interesting at least to see what a difference there is between the anesthetic procedures invoked in Hungary as compared with those in general use in this country. It may be that eventually general anesthesia will be almost entirely superseded by local measures as we were once led to believe by a prominent Roumanian physician who visited this country. Suffice it to say that local anesthesia might be used here more frequently than it is at present.



Edited by Dr. J. W. Wainwright.

The Tobacco Heart.—Dr. Harlow Brooks, (*New York Medical Journal*, April 24, 1915), in an article on the above subject concludes that tobacco produces symptoms referable to the heart, of a very definite and characteristic type; first manifested by an increased rate with rise of blood-pressure, later with a slowing and fall in pressure. These symptoms are apparently due to vagus effects and quickly disappear when the drug action passes. These symptoms all diminish in degree with habituation to the drug.

Prolonged excessive administration of tobacco induces arrhythmia and intermission. These symptoms are more or less persistently accompanied by a sense of weight or of pain of a dull persistent character in the heart region. Pain may be entirely independent of alterations in rhythm, though most likely to occur with a slowing of the usual rate. So far as can be surmised from experimental evidence and clinical observation, these symptoms are not due to vagus disturbance but to claudication of the coronary vessels. They are more likely to appear in chronic smokers than in beginners, and in long standing rather than in recent tobacco habituation.

Tobacco angina pectoris is in all symptomatic respects similar to the true angina pectoris by coronary disease. It occurs with considerable frequency in chronic tobacco poisoning; is unusual if not unknown in acute poisoning, and long habituation to the drug predisposes to this symptom. It is relieved by the usual vasodilators and by morphine. Is commonly succeeded or preceded by a sense of pain in the precordium. The angina of tobacco poisoning is entirely relieved and commonly does not recur if the use of tobacco is given up. One attack appears to sensitize to others. This sensitiza-

tion seems to disappear very slowly, and so far as can be determined, is due to a coronary claudication, entirely or almost free from vagus effect.

There is no clinical nor experimental evidence that disease of the heart muscle is caused by tobacco, save for possible changes in the papillary muscles, probably explainable on a mechanical basis. The fact that all symptoms disappear when tobacco is discontinued, seems to confirm this statement.

There is neither clinical nor anatomical evidence sufficient to indicate that true coronary sclerosis may be caused by tobacco, though it is highly probable that when this condition exists, the symptoms are accentuated by it.

Tobacco angina is promptly relieved by discontinuance of tobacco; no such results are to be obtained in true angina pectoris.

It is probably unwise to permit the use of tobacco in circulatory diseases when symptoms of cardiac embarrassment occur.

The persistent use of tobacco immunizes against vagus effects and sensitizes to coronary claudication.

Death may result from tobacco angina, but it is probably very rare and most likely to occur only when anatomically diseased coronary vessels preexist.

The essential treatment of tobacco poisoning is suspension of the use of the weed.

Sparteine Sulphate.—Samuel E. Earp, Indianapolis, in the *Denver Medical Times*, June, 1915, gives a most interesting study of this agent in over three hundred cases extending over a period of the last two years. Dr. Earp's conclusions are noteworthy in that he is recognized as a most careful observer and successful clinician. He sum-

marizes a number of interesting heart cases treated with sparteine which it would profit all internists to carefully read, which for obvious reasons we cannot instance in our necessarily brief reference. The diseases include arthritis complicated by cardiac involvement, pneumonia, diseases of the cardiovascular system and morphinism. The dose ranged from one to two grains. He scores the Lambert treatment of alcoholism and makes reference to the forced absence of morphine due to the Federal Antinarcotic Law as productive of weak and irregular heart. The worst of these cases responded to sparteine treatment. Dr. Earp considers sparteine a heart tonic, without the untoward effects of some other—presumably more popular—remedies, without more heart force and less frequency. He considers the orthodox small doses as worthless, does not advocate its use solely as a diuretic. While sparteine exerts equally as tonic an effect on the heart muscle as digitalis, its influence on the arterial system, especially the arterial capillaries, is directly the reverse, digitalis being a vasoconstrictor while sparteine is a vasodilator. By dilating the arterial capillaries it reduces the resistance against which the heart is called upon to propel the blood. It will thus be seen why it prevents myocardial and general exhaustion, favors heart nutrition and the increase of heart tone. It has the advantage of acting quickly and is practically nontoxic.

Crotalin in Epilepsy.—Ralph H. Spangler, (*Interstate Medical Journal*, January, 1915), in an article on Crotalin in the Treatment of Epilepsy gives the following general conclusions, as a result of personal experience, etc.

As a result of personal experience, from a review of the literature and from correspondence with physicians who have reported on the use of crotalin in cases of epilepsy, the following conclusions may be drawn:

First, crotalin in properly regulated doses modifies the severity of epileptic attacks and lengthens the interval between the seizures. There are cases on record in which the attacks have been entirely absent for periods of from one to five years.

Second, crotalin improves the general

health and metabolism of the patient. No hemolytic effect is produced on the blood. In females, functional menstrual disturbances are often much relieved and regulated.

Third, the mentality of the patient is favorably influenced by the use of crotalin. Apprehension and fear of an impending seizure, so characteristic a condition of the epileptic, frequently entirely disappear. The patient regains confidence in his own ability, with the result that a regular occupation can often be followed.

Fourth, the best results are obtained if bromides or other sedative treatment is gradually withdrawn, and eventually entirely withheld.

Fifth, it is preferable for an epileptic to have an occasional convulsive seizure, and to possess a clear mind and healthy body, rather than to have the patient's general health undermined and his mentality dulled by the use of bromides and other sedatives.

Vaccines.—E. R. Secord, (*New York Medical Journal*, April 24, 1915), in an interesting article on the Treatment of Acute Surgical Infections, has the following to say: "I am of the opinion that in the stock preparations of mixed infection vaccines we have powerful remedies for stimulating the power of resistance of patients who are seriously ill from that group of conditions which, for lack of a better name we may call the surgical infections. I am also of the opinion that it will permit patients to live and go on to recovery who would otherwise be overwhelmed by the severity of the infection. That the use of vaccine is without harmful results. That it is obvious that the use of the remedy should not be delayed until the patient is moribund, but if given while capable of responding to this stimulus it will be of inestimable value.

Autogenous Vaccines in Pneumonia and Typhoid Fever.—Nathan Raw, (*London Lancet*, April 3, 1915), reports having in the last five years, in hospital and elsewhere, treated 310 cases of pneumonia with vaccine, with 42 deaths, or a mortality of about 13 per cent. In many of the cases

the vaccine was given on the second or third day of the disease, every four hours or at longer intervals, according to the severity of the case, without once observing unfavorable symptoms following. The much discussed question as to whether or not a vaccine should be given in the course of an acute infective disease must, he asserts, be decided in the affirmative. During a recent visit to France the author found that acute cases of typhoid with high fever were being treated with antityphoid vaccine with excellent results.

Mineral Oil as a Laxative.—Ash, (*British Medical Journal*, April 3, 1915), concludes that it would be a pity if the worth of mineral oil were denied patients without some very good reason. He cites, for example, the large army of sufferers from neurasthenic and psychasthenic conditions in which mineral oil offers the most suitable means of combating the habitual constipation so prevalent in these conditions. Whatever the pathological basis of the common neuroses and psychoneuroses, there can be no doubt that a clean colon is essential to treatment. The author has found from experience that the mineral oil is a valuable adjunct to the successful control of the condition.

Camphor Treatment of Wounds.—Koch, (*Therapeutische Monatshefte*, Mar., 1915), reports on the use of camphorated wine in the treatment of wounds. He states that the skin retains its natural color, the granulations become exuberant, while there is rapid healing with relief from pain. He gives the following formula: Camphor 1 part, alcohol 1 part, mucilage of acacia .3 parts and white wine 45 parts.

Collodial Iodine and Serum Treatment in Tetanus.—Auregan, (*London Lancet*, February 27, 1915), reports treatment of twenty-three cases of tetanus. In addition to serum treatment he used local applications of a 20 per cent. of an oily suspension of colloidal iodine, together with intramuscular injections of the iodine. Of those thus treated 68.8 per cent. recovered.

Petrolatum in the Peritoneal Cavity.—Lisorska (*Roussky Vrach*, July 19, 1914), determined by experiments that petrolatum remains in the abdominal cavity for some time, that it is innocuous, but that it does not prevent adhesions.

Greasing the Feet to Prevent Frostbite.—A thorough application of grease to the feet, socks and lower portions of the drawers is said (*Bulletin de L'Académie de Médecine*, January 26, 1915), to serve as a protection against frostbite of the feet of those exposed, particularly the soldiers serving in the flooded trenches at the seat of war in Europe.

Strophanthin in Cardiac Arrhythmia.—Bohan, (*Missouri State Medical Journal*, October, 1914), reports on the use of strophanthin in eighteen cases of fibrillation with excellent results in all, except one case which carried a fever. If the pulse is rapid he gives one-hundredth grain (1/100) of strophanthin intravenously with usually a reduction of one-third the rate within one hour. One such dose in from four to seven days he usually found sufficient. In some patients, however, it had to be repeated every one to two days. Bohan compares the action of strophanthin with that from digitalis. His method of administration is easy and practically painless. In over 300 injections there were no bad results.

Neosalvarsan in Mental Deficiency.—Believing that syphilis is a frequent cause of idiocy, Findlay (*Glasgow Medical Journal*, October, 1914), used neosalvarsan intravenously or intramuscularly in four cases and found marked improvement in their mental conditions. Each case was one of marked mental deficiency, three of them being idiots. The treatment in all of the cases had a most salutary effect and although it did not bring them up to a normal level, it was possible for two of them to become educated and to care for themselves. Findlay suggests that in milder cases, especially if treatment were begun earlier it might be possible to obtain a complete cure.

Scopolamine.—Fonyo (*Press Medicale*, August 14, 1914), concludes from his own and results of others, that on account of its toxicity and affinity for cerebral tissue, scopolamine hydrobromide either in its active or inactive form when combined with morphine is not the satisfactory anesthetic formerly considered to be.

The Continuous Bath in the Treatment of Phlegmons and Bedsores.—Riehl, (*Wiener Med. Wochenschrift*, November 19, 1914), declares that in these cases fever is reduced, necrotic material cast off, retention of pus prevented, granulations favored, while abscesses perforate and infiltration disappear. The temperature should be maintained at 100° F.

Sweating of the Armpits.—Bathe with weak vinegar and apply the following dusting powder on a gauze pad:

Salicylic acid, grs. xx

Starch, ʒij

Powdered alum, ad. ʒiiss

For internal treatment give precipitated sulphur in dram doses once a day in milk.

Salicylic Acid as a Germicide.—Experiments with equal parts of salicylic acid and boric acid are reported by P. W. Bassett-Smith in the *British Medical Journal*, March 6, 1915. The material used for inoculating the animals was a highly infected earth containing aerogenes capsulatus and bacillus tetani. Guinea-pigs were used. A small wound was made, and a lethal dose of the earth rubbed in or buried in the subcutaneous tissue. Twenty-four animals were used; three controls died in forty-eight hours or less from acute hemorrhagic edema; seven were treated with thirty per cent. phenol paste, one only surviving. This one was treated five minutes after infection and antitetanus serum also given; three were treated with thirty per cent. cresol. One recovered, it being treated fifteen minutes after infection; antitetanus serum was also given. One was treated in five minutes with double cyanide paste; it died in forty-

eight hours. Five were treated with salicylic acid in five, fifteen or thirty minutes, with or without antitetanus serum. All recovered. Five were treated with salicylic acid powder plus other germicides, in five, fifteen or thirty minutes. All recovered.

Of the twenty-four guinea-pigs experimented on, all treated with salicylic acid recovered, whether associated with other germicides or not. The three controls and all but two of the remainder died in from thirty-six hours to six days from either acute hemorrhagic edema or tetanus. Similar results were obtained when the infection was bacillus pyocyaneus and staphylococcus pyogenes.

Colloidal Iron in Anemias.—Duhamal, (*Revue de Therapeutique Medico-Chirurgicale*, March 15, 1914), (*New York Medical Journal*, March 27, 1915), reports a series of cases of anemia treated with colloidal iron containing one part of the metal in 1,000 of fluid. The series include cases of chlorotic, infectious and posthemorrhagic anemia. The product was injected subcutaneously, intramuscularly or intravenously in dose of two to five c. c. (30 to 75 min.) with very satisfactory results. A rapid rise in hemoglobin and red cell count, without evidence of unpleasant effects of iron sometimes noticed. General nutrition and appetite improved, while headache, digestive and other symptoms common in anemia disappeared.

Atophan and Novatophan in Gout and Iritis.—C. A. Smith and P. B. Hawk, (*Archives of Internal Medicine*, February 1915), report cases in which these drugs were given and the mode of action. While the primary action of atophan is probably a stimulation of the kidneys to increased elimination of uric acid, an indirect action in mobilizing the acid in the body tissues is to be considered. This mobilizing is not extensive as shown by the fact that the uric acid content in the blood is lower at the cessation of treatment than before. In studies of iritis, there was no appreciable increase of uric acid excretion. This might suggest an important additional action of atophan unrelated to uric acid.

RATIONAL ORGANOOTHERAPY

Conducted under the editorial direction of Dr. Henry R. Harrower.

The Internal Secretions and Cancer.—

Since cancer is conceded to be the result of a plasmic deficiency which permits of abnormal cell proliferation at some point of specially low resistance, it is reasonable to suppose that there is a relation between the activity of the glands of internal secretions and those conditions which permit of the establishment of cancer.

We know that cancer is essentially a disease of cell senility as well as a progressive chronic toxemia; hence it is not difficult to show the relationship between the incidence of cancer and endocrinous disorders. If this can be done, it should not be difficult to make some deductions regarding the possibilities of organotherapy as a factor in the treatment of this disease.

We have been shown very definitely by numerous physiologists that the hormones control cellular activity, and that nutrition depends upon their subtle influences and the clinicians have informed us that it is possible to influence the activity of these hormone-bearing cells by means of organotherapy. Hence there may be good grounds for this method being used in the prophylaxis and treatment of cancer.

Of course, cancer is an organic disease; and organotherapy is effective principally in the control of disordered function, nevertheless the increasing knowledge of the action of the various internal secretions and the encouragement which is coming to those who are applying the principles of organotherapy should be of sufficient interest to warrant a more close consideration of the relation of the ductless glands to cancer, and the use of suitable organotherapeutic extracts to favor certain of these diminished endocrinous functions. One cannot succeed without trying, and the results of several sporadic attempts that have been made in different parts of the medical world cer-

tainly offer sufficient encouragement to warrant a consideration of the possibilities of organotherapy as an adjunct in the treatment of cancer.

The writer recently read a paper before the Medical Association of the Greater City of New York, entitled "Organotherapy in Chronic Disease with Special Reference to its Possibilities in Cancer," which appeared in the *New York Medical Record*, July 3, 1915. As it is too long to publish in this department interested readers may have a reprint of this monograph on request, which should be accompanied by a postage stamp.

"The Humoral Disposition to Cancer."

—In a very interesting consideration of the "Causative Factors in the Disposition to Cancer in Old Age," Theilhaber of Munich (*Surgery, Gynecology and Obstetrics*, 1915, page 650) insists that there is a decided deterioration of the tissue fluids or a "humoral disposition to cancer," in the majority of cases. He brings forward a number of important facts to bear upon his conclusion and asserts that the blood-forming organs are intimately concerned in the predisposition to cancer. Theilhaber believes that the younger the individual and the better the development and functions of these blood-forming organs, so much the less the inclination to cancer. The humoral disposition to cancer is largely due to an atrophy of the blood-forming organs which occurs in different individuals in varying degrees of severity. As a result of his extensive clinical experience, this writer has for some time used extracts of the spleen, thymus, etc., as adjunct remedies in the treatment of cancer, and states that "these injections have the advantage that they favor the humoral disposition Extracts of the

thymus, spleen and uterus increase the activity of the blood-forming organs and their injection causes a marked leukocytosis which renders the formation of epithelial proliferation difficult."

Some time ago in New York City, Rodenburg, Bullock and Johnson made a number of clinical experiments in this direction and, as a result recommended the use of thymus and other extracts as a part of the treatment of cancer. Little, of Rochester, has done some very interesting and original work in this field, and a brief report of his conclusions is given below.

A New Idea in Organotherapy.—"So much has been written about the ductless glands that one is apt to shy at a new article; so much has been claimed that one grows skeptical. Nevertheless, it is certain that these organs are all important and some of them are vital. Our ignorance is colossal, but we do know some facts concerning them and in certain cases may apply our knowledge clinically. A few personal clinical experiences may serve to show that even our slight knowledge may sometimes be used with great satisfaction and also that the field of usefulness will be much wider as our knowledge increases."

This, from the pen of S. W. Little (*N. Y. State Jour. Med.*, 1915, xv, p. 152) is a fit prelude to a most interesting consideration of "Some Clinical Relations of the Ductless Glands." Little has already made several contributions to the clinical study and treatment of cancer by means of various organic extracts, and is developing an entirely new phase of organotherapy which bodes well. Essentially, he believes that it seems highly probable that *the functions of the ductless glands concern chiefly tissues derived from the same embryonal layer as the gland itself*, and he has applied this in the treatment of cancer with what unquestionably must be called good results, although cases reported in his various communications by no means indicate that he has found a cure for cancer; in fact he disclaims having discovered a "cure." Briefly then, he uses extracts of organs derived from the ectoderm for ectodermic cancer, including cancer of the various superficial tissues. The preparation which he uses in such cases is pituitary

extract (whole gland). For cancer of mesodermic origin, for example, of the uterus, he uses extract of the adrenal cortex, while for entodermic cancer he suggests an extract made from the Islands of Langerhans of the pancreas. This is quite a revolutionary consideration of organotherapy and credit is due to Little for his judicial consideration of the subject, and the plodding perseverance with which he has applied his ideas in clinical practice, not only in cancer but in other ailments of unknown etiology. The subject is a complex one, cancer is "a hard nut to crack," nevertheless Little's work is suggestive and encourages one to believe that a more extended consideration of this hypothesis may ultimately prove of great value.

Preventing Postanesthetic Emesis.

There is an increasing tendency to consider the relation of the ductless glands to serious generalized morbid states. Crile's work and considerations of the kinetic system and anoci-association is based upon this. In the June issue of *The Medical Summary* Dr. E. Stuver of Fort Collins, Colorado, reports favorable experiences with the use of adnephren given prior to anesthesia. He gives eight drops of the 1:1000 solution (presumably by injection) and also paints the nasal cavity clear back to the fauces with a solution of ten grains of cocaine in one ounce of a 1:4000 solution of adnephren. In his opinion this is a very effective means of preventing postanesthetic nausea and shock and this writer suggests that the method is worthy of trial and asks that reports be made to him.

This is in harmony with a comparative report regarding the influence of chloroform upon the adrenal glands and the use of adrenalin as a prophylactic. Delbet of Paris makes the following statement (Abs. in *Jour. A. M. A.*, April 20, 1912, page 1211). "Without intending to attribute all the sequelae of chloroform anesthesia to alterations of the suprarenal glands, Delbet is thoroughly convinced that certain of these sequelae are due to these alterations and that it is possible to diminish or avoid them by reinforcing the insufficient suprarenal function by injection of epinephrin or of extract of suprarenal glands. There are,

indeed, certain sequelae which are entirely attributable to suprarenal insufficiency. Operative shock is one of these. It is characterized essentially by asthenia and weakness of the pulse, which are the symptoms of suprarenal insufficiency." Usually Delbet gives six minims of adrenalin 1:1000 solution before each operation and in his experience covering more than 1,000 patients these hypodermic injections in post operative conditions practically entirely obviate shock.

Combining Thyroid and Pituitary Extracts.

—There are some things in organotherapy that we cannot definitely explain save only by saying that since the glands of internal secretion are so intimately related, combinations of extracts may accomplish more than the single extract. In a communication regarding the medical treatment of pituitary disease (*N. Y. Med. Jour.*, 1915, ci. p. 392) Wendell Reber reports quite an interesting case of pituitary disease where for some reason thyroid medication was instituted. There was no noteworthy improvement and total pituitary substance was then added, i. e., a thyroid-pituitary combination was made. In four months normal vision was restored and other benefits were obvious. A lapse of several years from treatment caused the patient to have a return of his hemianopsia, and this time, presuming the pituitary substance was the essential remedy, total pituitary extract was given. Strangely enough the expected improvement did not occur but on the addition of thyroid the fields of vision again returned to normal limits for both form and color. Reber then goes on to say that: "Pituitary disease is a relatively common malady which has been heretofore largely overlooked. There is no question that from now on it will be much more frequently recognized. The question will then present itself, whether the treatment shall be medical or surgical. With a mortality of eleven per cent. attending the surgery of the condition, it seems that organotherapy should first be resorted to. And even though it may have to be pluriglandular, the end sought will more than justify the means. Eventually we shall learn whether thyroid or pituitary preparation or both are indicated and when and how. Meanwhile we

plead for a trial of organotherapeutics in pituitary disease. Should the medical treatment prove unavailing, resort may be had to surgery."

It will be noted that this writer makes a sort of apology for pluriglandular therapy. This is quite unnecessary, for pluriglandular therapy is much more rational in the majority of diseases of the endocrinous organs than monoglandular therapy, for the very good reason that it is impossible to have disturbance of one gland without associated change in the activities of the other ductless glands related to the one in which the disorder originates. Incidentally, it may be remarked that a good combination of thyroid and pituitary is $1\frac{1}{2}$ to 2 grains of the total pituitary extract given with $\frac{1}{4}$ to $\frac{1}{2}$ grain of thyroid before meals three times or more a day.

PRACTICAL NOTES.

Brittle and cracking nails sometimes may be an indication of a minor thyroid insufficiency.

Uterine Fibroids.—Mammary extract 5 or 10 grains, t. i. d., for two or three months.

Amenorrhea in girls sometimes responds well to total pituitary substance, one or two grains three times a day.

In Bright's disease first correct alimentary putrefaction. Secretin then aids in reestablishing pancreatic secretory activity.

Chronic Rheumatism.—Certain forms of rheumatism are benefited by $1\frac{1}{2}$ to 3 grains of thyroid extract daily in divided doses. The therapeutic test shows which cases respond.

First Use of Thyroid Medication.—Thyroid extract was first used in 1892 by Geo. R. Murray, then of Newcastle, for the treatment of myxedema. He tells recently of a woman who has been taking it for 23 years.



PROFESSOR CABOT AND THE WOMAN PHYSICIAN.

To the Editor

AMERICAN MEDICINE,
New York City.

I have been asked by a number of colleagues of both sexes whether I would not be willing to write a letter to the medical and lay press, stating my views concerning what has been considered an unjustifiable attack on women physicians made by Prof. Richard C. Cabot of Harvard Medical School in a recent address delivered before the graduating class of the Woman's Medical College of Philadelphia. I gladly comply with this request and hope that you, dear Doctor, will extend the hospitality of your columns to this brief communication. You may rest assured that thereby you will earn the gratitude of a fair-minded public within and outside of the medical profession.

I am particularly anxious to ask your kind cooperation because of the more or less sensational headings with which Dr. Cabot's remarks have been reproduced in the lay press and the likelihood of real harm being done to a just cause if some of the statements are not contradicted. Thus, for example, a New York paper, usually known for its dignified way of publishing news, headed the article "Doctor Man Calls Doctor Woman Unfit."

It is alleged that Dr. Cabot asserted that the majority of women physicians were not temperamentally and physically adapted for the more strenuous branches of the profession and therefore were "disappointed and dissatisfied." He is reported to have furthermore ventured the suggestion that women physicians should avoid taking up general practice and research work and should interest themselves in social service. Such statements as these, if accurately reported, must have surprised a great many physicians of the so-called stronger sex as they have surprised me, if it has been their privilege, as it has been mine, to associate professionally with our sisters in medical work.

Dr. Cabot, in my opinion, has committed a grave error and has made an unjust accusation and I feel sure that he will regret the statement after more serious reflection. I know Dr. Cabot personally and know him to be of that large-minded type of men who are willing to retract what may have been said on the impulse of the moment and which after due reflection they find to be erroneous.

It seems to me that we must admit that considering the relatively small number of women physicians in the world there are as many

among them who distinguish themselves as among the men physicians. Dr. Cabot must be familiar with the work of the pioneers among women physicians who have become illustrious in all branches of medicine. I will merely recall the names of a few of them: Emily Blackwell of New York, founder of the Woman College; Anne Cleveland of Philadelphia; Sarah Hackett Stevenson of Chicago; Mary Putnam Jacobi of New York; Cornelia Brown, the celebrated surgeon of San Francisco; Celia Mosher of the same city; Clara Marshall of Philadelphia; Lillian H. South of Kentucky, ex-vice-president of the A. M. A., noted for her work in the extermination of hookworm disease; Helen C. Putnam, M. D., LL. D., of Providence, R. I., one of our best authorities on school hygiene; Mary E. Lapham of North Carolina, one of the American pioneers in the treatment of pulmonary tuberculosis by artificial pneumothorax; Sarah McNutt, S. Josephine Baker, Lydia Allen De Vilbis, Rosalia Slaughter Morton, Anna W. Williams, of New York, all known for their unceasing labor on behalf of scientific medicine, public health, and child hygiene. Besides these, there are many others well known throughout the country for their unselfish and excellent work in their respective branches. Abroad we have Dr. Lydia Rabnowitsch of Berlin, who recently received the title of Professor from the German government for her researches in tuberculosis; the late Robert Koch counted her among his most distinguished pupils. Paris too has many women physicians of distinction and the greatest among them is Madame Klumpke Dejerine, celebrated for her researches in neurology. There are hundreds of other women physicians not all equally renowned but certainly equally successful in their practice.

There are of course disappointments in the medical profession to women as well as to men. Some of both sexes are unsuccessful but to generalize and say that women are unsuited for the medical career, and particularly for general practice, is a grave injustice. The woman who enters the medical profession with that enthusiasm, devotion, and self-sacrifice characteristic of her sex will not only be of as great service to suffering mankind as her brother physician but will rarely fail. She will be neither "disappointed or dissatisfied" but will do her work as well as the rest of us.

The social service of which Dr. Cabot thinks women are particularly capable can be rendered by the woman of average intelligence without the four or five years training necessary to attain an up-to-date medical education. If in Dr. Cabot's opinion woman has a better understanding of social service than man has, then the woman physician can aid and guide the lay worker in the field of usefulness with all the greater intelligence and skill.

This is not the age of either man or woman alone; let us work side by side with our sisters in medicine, open the doors of all the medical schools to women and give them equal opportunity and they will do their share in advancing medical science, alleviating distress and suffering, sharing in social service as they

are sharing nobly in other fields of human activity.

Believe me,

Most respectfully yours,

S. ADOLPHUS KNOPF, M. D.

GENERAL TOPICS

"Articles of Faith" Concerning Cancer.—During the four-day Cancer Educational Campaign, held under the auspices of the Vermont State Medical Society, June 8-11, 1915, Dr. William Seaman Bainbridge, of New York City, presented a paper entitled "The Cancer Patient's Dilemma—A Plea for the Standardization of What the Public Should be Taught in the Campaign of Education Concerning Cancer" (*N. Y. Med. Jour.*, July 3, 1915), which concluded with the following twenty-one "Articles of Faith":—

1. That the hereditary and congenital acquirement of cancer are subjects which require much more study before any definite conclusions can be formed concerning them, and that, in the light of our present knowledge, they hold no special element of alarm.

2. That the contagiousness or infectiousness of cancer is far from proved, the evidence to support this theory being so incomplete and inconclusive that the public need have no concern regarding it.

3. That the communication of cancer from man to man is so rare, if it really occurs at all, that it may be practically disregarded.

4. That those members of the public in charge of or in contact with external manifestations, or discharges of any kind, need at most take the same precautionary measures as would be adopted in the care of any ulcer or open septic wound.

5. That in the case of patients with cancer there is much less danger to the attendant from any possible acquirement of cancer than there is of septic infection, or blood poisoning from pus organisms.

6. That in cancer, as in all other diseases, attention to diet, exercise and proper hygienic surroundings is of distinct value.

7. That, notwithstanding the possibility of underlying general factors, cancer may, for all practical purposes, be at present regarded as local in its beginning.

8. That, when accessible, it may, in its incipency, be removed so perfectly by radical operation that the chances are overwhelmingly in favor of its non-recurrence.

9. That, when once it has advanced beyond the stage of cure, suffering in many cases may be palliated and life prolonged by surgical and other means.

10. That while other methods of treatment may, in some cases, offer hope for the cancer victim, the evidence is conclusive that surgery, for operable cases, affords the surest present means of cure.

11. That among the many advances in and additions to cancer treatment, the improvements in and extensions of surgical procedure surpass those in any other line, and fully maintain the pre-eminent position of surgical palliation and cure.

12. That there is strong reason to believe that the individual risk of cancer can be diminished by the eradication, where such exist, of certain conditions which have come to be regarded as predisposing factors in its production.

13. That some occupations, notably working in pitch, tar, paraffin, analin or soot, and with X-rays, if not safeguarded, are conducive to the production of cancer, presumably on account of the chronic irritation or inflammation caused.

14. That prominent among these predisposing factors, for which one should be on guard, are: general lowered nutrition; chronic irritation and inflammation; repeated acute trauma; cicatricial tissue, such as lupus and other scars, and burns; benign tumors—warts, moles, nevi (birth-marks), etc.; also that changes occurring in the character of such tumors and tissues, as well as the occurrence of any abnormal discharge from any part of the body, especially if blood stained, are to be regarded as suspicious.

15. That while there is some evidence that cancer is increasing; such evidence does not justify any present alarm.

16. That suggestions which are put forward from time to time regarding eugenic, dietetic and other means of limiting cancer, should not be accepted by the public until definitely endorsed by the consensus of expert opinion. Such consensus does not exist today.

17. That so far we know there is nothing in the origin of cancer that calls for a feeling of shame or the necessity of concealment.

18. That it will be promotive of good results if members of the public who are anxious about their health and those who wish to preserve it will, on the one hand, avoid assuming themselves to be sufferers from one or another dreadful disease, but, on the other hand, will submit themselves periodically to the family physician for a general overhauling.

19. That at all times and under all conditions there is much to be hoped for and nothing to be feared from living a normal and moderate life.

20. That the finding of any abnormal condition about the body should be taken as an indication for competent professional and not personal attention.

21. That watchwords for the public until "the day dawns" and the cancer problem is solved, are:—Alertness without apprehension, hope without neglect, early and efficient examination where there is doubt, early and efficient treatment when the doubt has been determined.

American Medicine

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Persecution in the Guise of Regulation.—No earnest, public spirited person can fail to sympathize with and support all consistent efforts to reduce to a minimum the unquestionable evils traceable to the improper and unwise use of habit-forming drugs. The menace of the indiscriminate sale of narcotics has been developing for several years, and while the addiction to habit-forming drugs—according to a Federal report on the subject,—has been no where near as extensive as generally stated, it has been evident for some time that definite, systematic effort must be made to control and correct the situation. Unfortunately the matter was taken up enthusiastically by persons, who, however well intentioned and sincere in their motives were lacking nevertheless in the broad comprehensive knowledge of the practical details of the problem needed to solve it properly. As a consequence, State and Federal laws have been hastily passed that not only fall far short of their purpose but also subject the medical profession to needless annoyance and bid fair to cause innocent sufferers uncalled for anguish and distress. In previous issues we have referred to this matter and called attention to the suffering which these antinarcotic laws are apt to inflict on hapless individuals who instead of being wilful devotees to

vicious practices, are really pitiable victims of morbid conditions for which they are not fundamentally to blame.

Recent study of drug and alcohol addiction has brought out the important fact that the person thus afflicted should have sympathy and wise care rather than punishment, for he or she is not a vicious minded, wilfully bad individual, but a person who is sick and suffering from a nervous or mental weakness which makes him, or her, especially susceptible to drug habituation. The subject is too extensive and complex to admit of a full discussion at this time but it is a well demonstrated fact that there is a pathologic basis for alcoholism, morphinism and the like, and if our lawmakers had been better posted concerning these important facts, recent legislation would have very properly paid more attention to the humane phases of the question. That the promiscuous sale and handling of drugs needed drastic measures is certain. Unscrupulous and evil minded individuals have prosecuted a trade in morphin, cocain, heroin, etc., that has aspects that arouse the antagonism and anger of every honest citizen. Such despicable wretches who wax wealthy on the frailties and weaknesses of afflicted individuals cannot be stamped out too rigorously. Any physician who will

take advantage of these human wrecks and sordidly take their afflictions as an opportunity to sell them drugs at a profit deserves no consideration at the hands of decent men. The drug addict is a sick and suffering person who is entitled to the utmost consideration and sympathy. He needs help and intelligent care—with special treatment for the condition underlying his drug habit—no matter what his moral delinquency. This is not only demanded from the medical viewpoint but also from that of humanity. To take any other course and submit a drug addict to sudden suspension of his drug will subject him to the most terrible suffering, and penalize him for something for which he is not responsible. More than this it exposes him, or her as the case may be, to grave danger of sudden collapse and death. Because of these facts we earnestly hope, that in the near future our antinarcotic laws may show more consideration for the drug addict, and in seeking to reduce the sale and unwise use of these narcotic drugs, make intelligent provision for placing those afflicted under the immediate direction of a skilled physician or in a suitable institution. Especially should definite provision be made for safeguarding the physical condition of those addicted to drugs who are arrested and thrown into jail. It is the acme of cruelty to force such individuals to go without their customary drugs for protracted periods and the situation should not be left in the hands of officials, who however efficient they may be in the detection of crime, cannot be expected to grasp the gravity of the matter from a medical standpoint. The instant a drug addict is incarcerated he should be placed in charge of a skilled physician who can determine his need for drugs and regulate his treatment accordingly as long

as he is kept under control. Only in this way can grave harm be avoided and proper care given to an unfortunate class.

Narcotic laws are not intended to hamper honest practitioners of medicine

or interfere in any way with the legitimate prescribing or dispensing of remedies. A physician who has complied with the medical practice laws of his State and received his license to practice is thereafter the sole judge as to what he orders for or administers to his patient. If he decides opiates are needed, *his decision is final*. The narcotic laws may exact certain details but these are intended to regulate the sale of habit-forming drugs and insure records thereof. In no way are they intended to place any restriction on the relations between physician and patient, or affect the judgment of the physician as to what his treatment is to be. This is the situation so far as the laws themselves are concerned. Unfortunately, however, abuses are apt to creep into the administration of laws as well as medicines, and just as we have stated before, the execution of the recent antinarcotic laws is very apt not only to embarrass and annoy honest medical men, but also to give rise to serious injury and harm. Several examples have come to our attention recently, and because we believe in the principles involved in our antinarcotic laws, but have a deep-seated objection to the loose and impractical way in which they were drawn, with surprising disregard of the real problem, we propose to devote much attention to these questions from now on. As a matter of fact, laws having a bearing on medical practice are multiplying so rapidly that we feel it a duty owed to the profession to discuss medical legislation henceforth much more fully than we have in the past.

To refer to recent abuses in the administration of our antinarcotic laws, we shall take up the proposition in our next number and point out to our readers the dangers that threaten, however careful a practitioner may be or how honorable his intentions. A case in point has suggested much of the foregoing. A young physician who was called upon to treat several drug addicts was extremely loath to undertake their cases because of the possible danger of having his purposes questioned; nevertheless, after listening to his colleagues he decided that on the grounds of humanity he could not shirk the burden, and started in treating these cases with the utmost care and fidelity. All went well and under painstaking attention to each case and study of individual needs, gratifying progress was made in restoring these patients to nearer normal living. A call from a Federal inspector disclosed that the young physician was keeping his records satisfactorily and conforming to the law in every particular. But one day one of his patients was arrested for some petty act, and a portion of the day's allotment of his drug was found on him. No chance for criticism of this, but it was a lead and straightway two or three plain clothes men and a chemist called on the doctor. With much bluster and lack of courtesy his records, supply of drugs, etc., were hastily scrutinized and after rapid calculation of records covering several months the doctor was declared to show a deficiency between his purchases and sales of heroin of 198 grains. This was later revised and the shortage claimed to be 148 grains.

Without attempting to account for this or considering the possibility of error, the doctor's records, books, and drugs were confiscated and the doctor himself placed un-

der arrest. To the police station he was at once taken, charged with the unrecorded sale of 148 grains of heroin and held in bail of \$500 for trial!

A more unjust and unfair procedure was never carried out. No consideration was shown this physician whatsoever, no attention paid to the fact that he was a legitimate practitioner in excellent standing, that his records were remarkably well kept and that there was every indication that he had lived up to the requirements of the law with exceptional care. The hasty conclusion that he had apparently not accounted for 148 grains was sufficient to lead these officials to injure this doctor's reputation, submit him to the trouble and expense of a trial and seriously jeopardize his business! Such uncalled for action cannot be too severely criticised, especially in view of the facts that finally developed. As soon as possible after his arrest, the young doctor, on the suggestion of a medical friend, took steps to determine the accuracy of his scales. On careful weighing by the official tester of weights and measures it was disclosed that his weights were all too heavy, the overweight being slight but sufficient when multiplied by the many different weighing operations necessarily performed during the period covered, to *account for the entire discrepancy!* How easy it would have been for the officials in view of the fact they were dealing with a professional man, a reputable physician, to have deferred action for twenty-four hours, looked into all phases of the question, examined his scales and weights, and used reasonable care in trying to account for the supposed shortage, instead of hastily attributing it to venality! It is certainly a shame that so grave an injustice could be possible in the name of law and order. Ob-

viously the law was not to blame, but we cannot help but feel it could have been drawn with greater regard for the medical profession, and some provision made giving licensed physicians in good standing a chance to explain any supposed irregularity or possible error before a proper official with power to dismiss the accusation, or issue a warrant for arrest, according to his conclusions. Of course, it may be pointed out that medical men are responsible for the accuracy of their weights and measures. So they are. But few physicians ever think of having their weights tested by an official tester, and if they are unfortunate enough to have purchased scales that are inaccurate, they may indeed be guilty of negligence in not having ascertained the fact; *but any discrepancy resulting under such conditions between the amount of drugs purchased and the amount dealt out, most assuredly cannot be considered "drugs sold or dispensed without due and proper record," within the meaning of the State or Federal laws.* The penalties of both laws are very plainly aimed at the *intentional violation* of their restrictions and not at failure to record drugs unwittingly dispensed or disposed of in infinitesimal amounts through faulty weights or scales, the physical limitations of the weigher, or the inevitable losses incident to spilling or the adherence of particles to containers, papers, scale pans, etc., etc.

The young doctor whose case we have referred to will have little difficulty in proving his innocence, but this will hardly reconcile him to the humiliation, loss of time, expense, and damage to his reputation that over zealous officials wrapped in the mantle of an uplifting law have forced him to undergo.

Two lessons stand out. *First*, that every physician should frequently interrogate his

methods, system and every detail connected with the use of narcotic drugs, with the object of eliminating as far as lies within his power any error, deficiency or uncertainty in keeping his records; and *second*, that every physician should make his voice heard when laws are being made, not with the purpose of securing any special favors or gain for himself but solely to give all possible aid in qualifying such laws for the maximum attainment of their purposes with the least possible inconvenience and injury to all whom they may affect.

Enterostasis.—The theories of Sir Arbuthnot Lane as to the causation of that condition to which he has given the name chronic intestinal stasis, have found much credence among members of the medical profession of the English speaking race. In Great Britain, in particular, the views of Lane are believed in to a greater or less extent, by a very considerable proportion of his colleagues. Some of these, however, do not go as far as the propounder of the theory that chronic intestinal stasis is caused by a mechanical defect, a kink or angulation of some part of the small intestine by which the passage of feces is retarded. On the contrary, they recognize that chronic constipation may be brought about by a variety of causes, and still be followed by auto-intoxication with its almost interminable train of pathologic manifestations. Still more authorities disagree with Lane in regard to the radical operative measures—colectomy, etc.—he advocates and practices for the cure or relief of the condition he describes as chronic intestinal stasis.

But whether this great British surgeon is wholly or only partly correct in his operative views, or even if he be quite mistaken,

the great majority are agreed in giving him credit for having done an infinite amount of good by his researches on the subject, and for his admirable and earnest persistence in striving to get a realization of its importance. By his boundless energy in the face of opposition that has not infrequently been biased nearly to the point of malice, he has drawn the attention of the medical profession to the study of the causes and treatment of possibly the most dangerous conditions which threaten the health of mankind, chronic constipation, intestinal stasis and alimentary toxemia. The debt which the profession and the public owe to Lane, therefore, can scarcely be overestimated.

While Lane and his disciples have done most excellent missionary work in propagating his theories in this country and in Great Britain—in Europe little heed has been paid to them—it has always been held by a considerable number of scientific medical men—Hertz in Great Britain particularly—that Lane was following a false trail, and was deceived by an *ignis fatuus*. Recently, the acknowledged foremost anatomist in Great Britain, Professor Arthur Keith, the Conservator of the Museum of the Royal College of Surgeons, delivered the Cavendish lecture, the title of which was "A New Theory of the Causation of Enterostasis." Keith's theory though perhaps not actually destructive of that of Lane is not in accord with it. The new theory places the onus for the causation of intestinal stasis upon the heart.

Keith's researches on the ileo-cecal region of the bowel have been going on for some years, but it is only comparatively recently that these researches have seemed to him to have a distinct bearing on intestinal

stasis, and have in consequence been prosecuted with the object of evolving a theory with regard to its causation. He found that Koelliker had recognized a cellular element in the myenteric plexus which was different from any form of cell occurring in other nerve plexuses. Furthermore, he found that Dr. L. R. Muller in an account published four years ago on the innervation of the bowel, stated definitely that the myenteric plexus differed from a true nerve plexus both in structure and in staining reaction. He found, as has Keith also, that the methods which are usually effective in demonstrating the structure of the nerve tissue did not serve to bring out all the structural elements which go to make up the intramuscular plexus in the bowel.

He, therefore, adopted the following conception as a working hypothesis; that the myenteric plexus represents a nodal and conducting system. He regards the intermediate branched cell as capable of assuming the appearance of either a nerve element or of a muscle element.

Keith argues that if he is right in presuming that the myenteric plexus represents in the intestine a system which corresponds to the nodal and conducting system of the heart, then it is also to be expected that both systems should be developed in a corresponding manner. After tracing the scheme of development of both systems he concluded that the bundle system of the heart and the myenteric plexus represent corresponding functional structures. The next step was to examine other parts of the alimentary tract where peristaltic movements are known to arise, and his search for a nodal system along the alimentary tract had reached a satisfactory stage when he met Dr. Alvarez, who was working in Dr. Cannon's laboratory at Harvard Uni-

versity, and the result of his (Alvarez's) investigations seemed to confirm him in regarding the ileo-colic collar as a nodal center, as a pacemaker for the cecum and ascending colon. In short, for Keith's able presentation of his views are both too long and too technical to discuss in detail in these brief remarks, his conclusions are that neither mechanical conditions nor even derangements of sphincteric mechanisms can give an adequate explanation of enterostasis.

Keith's explanation of the nature of enterostasis is therefore as follows: In passing along the alimentary tract, food is propelled through a series of zones or segments, each furnished with its own pacemaker and its own rhythmical contractions. In the heart two such zones are found, an auricular and a ventricular; in the normal heart the sino-auricular node is the master pacemaker. But a block or imperfection in conduction may occur between the two zones of the heart with the result that "back-pressure," a venous stasis, is produced. Now seeing the similarity between the cardiac, and alimentary motor mechanisms, there should be no presumption in supposing that irregularities may occur in the nodal and conducting system of the alimentary canal, irregularities of the same kind as are known to occur in the heart. When such irregularities or blocks do occur the expectation is to find them at the points where one rhythmical zone or area passes into the succeeding zone. This is exactly what is found. A block is found where the esophagus joins the stomach; another where the gastric zone ends and the duodenal begins; another where the duodenal zone passes into jejunal and where the jejuno-iliac passes into the ileo-colic. A block may occur at any point of passage from a lower to a higher rhythm.

At several of these junctional points sphincters are situated, and it cannot be denied that the mechanism of such sphincters may become disordered and cause alimentary stasis, but it will probably be found that the disturbance in the action of a sphincter is secondary to a disturbance in the excitability and action of the whole rhythmical zone or segment to which it belongs.

The foregoing paragraphs contain the gist of Keith's theory. According to his views the cause of chronic intestinal stasis is physiologic rather than some local mechanical defect. If this is so, treatment must undergo a revolution. Nevertheless, Keith's theory has not been fully substantiated. It is yet but a theory, and it will be interesting to notice how it is received. Time alone can prove its soundness and accuracy. In the meantime, every thoughtful physician owes it to himself to give these various theories careful thought and consider them in the light of his own knowledge and observation.

The American Medicine Gold Medal for 1915 has been awarded by the Trustees to Dr. Rupert Blue, Surgeon-General U. S. Public Health Service. Much satisfaction will be derived from this selection, for while Dr. Blue's work is not known as widely as it should be, there are a great many of his colleagues who are well aware of the things he has accomplished and the conspicuous ability and devotion to duty that have characterized the services he has rendered as a U. S. Public Health official. In many trying positions Dr. Blue has demonstrated in addition to exceptional medical skill, the tact and foresight of the born diplomat. As a consequence, he has been able to achieve results in instance after in-

stance that would have been out of the question for a man of less ability and judgment. Never was a medical official confronted by a more difficult problem than that which Dr. Blue was called upon to meet in California when the plague situation arose in 1903. But fortified by his knowledge, experience and the courage of his convictions he was able to withstand the machinations of the politicians and win a signal victory over those who neglected

man to the front and Dr. Blue received steady promotion year after year until in 1912 he was given the highest office in the Service, that of Surgeon-General. In this position he has proven his worth as an executive and under his direction the U. S. Public Health Service has reached the highest state of efficiency in its history. Quietly and unostentatiously Dr. Blue is pursuing his labors, but those who know what he is doing, not only take just pride in the achieve-



THE AMERICAN MEDICINE GOLD MEDAL FOR 1915.

nothing, no matter how small and petty, to defeat him. It was another instance of a strong capable man seeing his duty and fulfilling it in the face of the opposition of those who fearful of money loss, wanted to hide the facts. But Dr. Blue knew that publicity and open wide methods were essential to protect the American people, and even though such a course might work temporary hardship on California business interests it would be the best and wisest in the end. Hard and strenuous was his campaign but success soon crowned his efforts and he had the satisfaction of having his judgment and methods completely vindicated.

Work of this kind is obliged to bring a

ments of the department, but realize that it is ready and prepared as never before to cope with any emergency that may come within the field of its activities.

Dr. Rupert Blue was born in North Carolina, educated at the University of Virginia, and received his medical degree from the University of Maryland in 1892. According to the *J. A. M. A.*, "Immediately thereafter he entered the U. S. Public Service as interne, and became assistant surgeon in 1893, passed assistant surgeon in 1897, surgeon in 1909, and surgeon-general in January, 1912. During this time, he was stationed at Baltimore, Galveston, Charleston, San Francisco, Portland, Ore., Mil-

waukee, New York, Norfolk and New Orleans, having been assigned to hospital, quarantine and other public health duty, all of which has fitted him for the high office which he now holds with the government, and which enables him to foresee the great work ahead and the part the medical profession should play in it.

Dr. Blue was sent to Italy by the president when cholera threatened our shores in 1900. In 1905, he was second in command of the measures taken in New Orleans and vicinity to eradicate yellow fever. In 1903, and again in 1907, he was placed in charge of plague-eradication measures in California, and handled a difficult situation with the result not only that the disease was controlled, but also that all interests in the state were harmonized. The last-mentioned is perhaps the most important single work he has performed, and during its conduct he advanced and proved the principle that rat proofing is the essential means necessary to prevent plague in urban communities. As a result of the enforcement of rat proofing, he has demonstrated that the eradication of plague is entirely practicable, and, in consequence, that cities may be kept free from the disease.

As Director of Sanitation of the Jamestown exposition, Dr. Blue had practical experience in the reduction of mosquito-breeding areas to prevent malaria. This work was in line with his interest in tropical diseases, which interest was later responsible for his making a special study of those diseases at the London School of Tropical Medicine, and for his assignment as adviser to the governor of Hawaii for the reduction of mosquito-breeding areas in that territory, with the object of guarding against the introduction of yellow fever and ma-

laria after the opening of the Panama Canal. It was from this duty that he was called to become the chief of his service.

Perhaps the most significant achievement of Dr. Blue's career, however, has been the remarkable development of public health work under his direction, especially as relates to scientific research. Public health education by the federal government is important, but the conduct of investigations along broad lines, and continuously followed, is by all odds the most important function of the federal government in matters affecting the public health. These he has encouraged, as is evidenced by the many lines of new work undertaken in the recent past. Some of this work has been done in cooperation with other branches of the government, and a cordial system of cooperation seems to be one of the means taken now to advance public health work on the part of the government.

In no country, perhaps, is there a larger or better public health organization than in our own; but under present auspices it may be expected that this service will enlarge and become a governmental branch second to none, and fulfil the ideals which have been held by the profession."

Radium Emanation and the Treatment of Rheumatic Conditions.—No one could have read the remarkable symposium on rheumatic affections in our June issue, and have weighed the various therapeutic measures advocated, without having been impressed with the references to radium and radium emanation. During the past ten years this method of treatment has been extensively employed, chiefly in Europe, and has been



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made the subject of a voluminous literature. In this country, however, but few investigations have thus far been made and reports are exceedingly meagre. This is not surprising in view of the fact that in European countries the effects of radio-active medication have been particularly studied in the many spas which have long enjoyed a high reputation in the treatment of various forms of rheumatism, while here in America, in spite of our wealth in mineral springs, such investigations have been lamentably scanty. There is scarcely a mineral spring resort of any importance in Germany, for instance, in which elaborate provisions have not been made for the use of radium emanation in the various conditions for which it is indicated, and hence the resident physicians at these places have been able to accumulate a large amount of clinical experience. Of course, to form a correct estimate of what has been accomplished with emanation therapy, due allowance must be made for conscious or unconscious exaggeration, since at spas where so many factors contribute to the beneficial results obtained, it is difficult to determine to what extent they are influenced by radio-active medication alone. But while fully conceding this, it must be admitted, in the light of our knowledge of the action of radium emanation, that it plays a not insignificant part in the success of this treatment—how important the future alone can tell. To be perfectly just we must bear in mind, however, that this method has been chiefly tried in the chronic forms of rheumatism and in rheumatoid arthritis, which are not readily amenable to therapeutic measures of any kind. Hence to expect rapid and striking results or even a cure in

such patients, would be to expect almost a miracle. Even a moderate improvement—the relief of suffering, the reduction of swelling, and the restoration of more or less suppleness to previously stiffened joints—means a great deal to these chronic invalids, and judged from this conservative standpoint the results of emanation treatment are very encouraging.

But there is reason to believe that it can accomplish even more by improving the metabolism which is generally impaired in chronic rheumatism and arthritis deformans. According to many investigators, the emanation increases the oxidation processes, promotes the elimination of waste products, and also activates various enzymes (pepsin, pancreatin, diastase, autolytic ferments, etc.), and these effects afford a rational explanation of part of its action in the chronic conditions under consideration.

Since so few chronic rheumatics are able to avail themselves of radio-active medication at mineral spring resorts, it is fortunate that methods have been originated for administering the emanation to persons who cannot journey to a spa. In some of our large cities emanatoria are being provided for inhaling the emanation and radio-active baths are also obtainable. For obvious reasons, however, the drinking of radio-active water is the most convenient and generally applicable method of utilizing this agent, and various apparatuses or methods of a practical and evidently effective character have been devised by means of which water can be readily charged with the emanation in any desired strength and made ready for routine use.



Alas, Too Late!—The way that Fame neglects to give due recognition to countless deserving "workers in the vineyard," and at the same time showers her favors on other individuals whose labors are much less noteworthy, is one of the strange customs of this fickle dame, that has darkened many a man's life and filled his soul with disappointment and bitterness. In no field of human activity are there more frequent instances of Fame's perverse or faulty judgment than in medicine. Medical history gives little more than an inkling of those whom Fame has unjustly ignored, for in addition to being a fickle jade, Fame has often been hasty and superficial in her conclusions, as a result of which she has made many mistakes in bestowing credit for the great achievements of medicine. Controversies a plenty abound, therefore, in the history of medicine, a condition that has not tended to promote progress or help men to rise above selfish aims and desires.

It is too bad that all this is so and that so many, neglected by Fame, have known the bitter hurt that comes from having their rightful credit not only withheld, but wrongly given to those to whom it did not properly belong. Name after name could be mentioned of those who have made great contributions to medical science only to have their services discounted, often disputed, and all too frequently credited to false claimants.

The death of the great Cuban physician, Carlos J. Finlay, news of which has just come from Havana, has been responsible for much of the foregoing, for if there ever was a man whose work has failed to receive proper notice and recognition, it is his. Beyond all possible question Finlay was one of the first, if not the very first to call serious attention to the mosquito as a probable factor in the etiology of yellow fever. His studies and experiments placed the matter on a scientific basis, showed that the problem was practical and far-reaching in importance, and pointed out that the one great

lesson to be learned from the whole situation was that of prevention. Thus he became one of the first to preach the necessity for screening living and sleeping quarters, together with the employment of all possible measures for destroying mosquito larvae, and eliminating their breeding places. Finlay met plenty of opposition, his views were derided and ridiculed, and like every other man who dares to broach something new and original, he had to suffer attack and the shafts of jealousy and meanness from the very ones who should have given him staunchest support. Secure in his knowledge, however, and upheld by the certainty that he was right, Finlay never gave an inch but kept bravely by his guns. It was not long before his deductions were proven true, and more fortunate than many men, he lived to see every one of his theories accepted and established as facts. Naturally, as a pioneer in this line of investigation and the one man whose earnest, well planned studies secured the serious consideration of the matter by those capable of determining the truth, Finlay expected due recognition. Instead, he saw others acclaimed as the discoverers of the mosquito theory, and his own splendid work practically ignored and all but forgotten. Of course there have been many who have never failed to pay Finlay's early researches the credit and honor they have merited. But the full and unreserved recognition he should have had, never came to him. Happily he was not a man to allow even so grave an injustice to crush him or make him a misanthrope, but who knows what hours of sadness, what moments of sorrow and disappointment were his when he paused to consider the injustice he had been subjected to by an indifferent, thoughtless and heartless world! Now that Finlay has passed on to a better—and fairer—land, his fine services to medicine that have meant so much to humanity may be viewed in their right proportion.

It does seem too bad that men have to die before their work is appraised at any where near its proper value! How much encouragement many of our great investigators and clinical students would receive if they knew that there was a reasonable certainty that real achievement would receive proper recognition!

Fulsome praise and cheap publicity are

not what we mean, for these would do more harm than good. No, these are far from our idea. But there ought to be some provision made for recording work of a notable character and giving to those who accomplish things, the recognition they are entitled to. Here is a fine chance for some of our philanthropists. In no way could they do more to encourage unselfish work in scientific medicine than to provide some plan that will insure recognition and honor to those whose labors are worthy.

The AMERICAN MEDICINE Gold Medal is only a humble effort in this direction but it was established to aid even though slightly, in directing attention to those who—unselfishly and with the spirit of the true physician—are working to lighten humanity's burden of disease and suffering.

Because we are firm in our conviction that the time to honor a man who deserves it is while he is alive, we have missed no chance in the past of commending good work, and we hope to be even more liberal in this respect in the future.

The Condition Called "Neurasthenia."

—A symptom-complex rather than a distinct disease—is being more carefully studied these days. There seems to be a good deal more of it, too, especially in Europe; and the incidence of much of it must be laid to the war.

Already, we have the self-explanatory terms "shell shock," "zeppelin-phobia," "post-traumatic neurasthenia"—vague conditions of neurasthenia which are directly or indirectly the result of the exigencies of war. Quite a number of communications have appeared in the medical literature concerning the varying manifestations of these war-time neurasthenias. Our knowledge of the subject, however, is just as indefinite today as it has always seemed to be—for the opinions regarding neurasthenia have differed even more than the ideas of all medical men usually differ.

It would appear that the organs of internal secretion are to be charged with causing many of the disorders which together form the neurasthenic syndrome. In fact the more we study the neurasthenic indi-

vidual and observe closely the incidental variations in physiologic or functional activity, the more evident it becomes that neurasthenia rarely exists without some associated disturbance in the work of the ductless glands.

Apropos of this, Cannon has recently directed attention to the exciting effects of the emotions, such as fear, pain, rage, etc., upon the adrenal system, and in a recent book ("Bodily Changes in Pain, Hunger, Fear and Rage") collates much evidence to show that the chromaffin principle or hormone which he terms "adrenin" facilitates the capacity of the organism to endure increased fatigue, to perform greater feats of strength, and to increase the courage. This only lasts until the adrenal bodies have been worked out, and the resulting hypoadrenia or adrenal exhaustion is quite a serious factor in the causation of these various war-time neuroses.

It is interesting to recall what Sajous said a number of years ago about the importance of the adrenals, and especially of their functional depletion. He wrote: "Functional hypoadrenia is the symptom-complex of deficient activity of the adrenals due to inadequate development, exhaustion by fatigue, senile degeneration, or any other factor which, without provoking organic lesions in the organs or their nerve paths, is capable of reducing their secretory activity. Asthenia, sensitiveness to cold and cold extremities, hypotension, weak cardiac action and pulse, anorexia, anemia, slow metabolism, constipation and psychasthenia are the main symptoms of this condition."

One can quite easily understand that just such a condition would be present in individuals driven from home and subjected to exposure and hunger. Similarly, men returning from the trenches, where they have been subject to extreme fatigue and the tenseness of the atmosphere, as well as the mental effects of losing their comrades and themselves suffering from wounds and shock, must also be considered to be in a state of adrenal insufficiency.

Not a few conditions met in our own country are capable of bringing about the same kind of results, and it is easy to imagine combinations of circumstances which would cause adrenal insufficiency,

and which might therefore explain the incidence and frequency of neurasthenic manifestations.

The Vivisection of a Nation.—George W. Crile has given his attention to another phase of the war neuroses which is closely allied to the preceding subject. In a contribution to a symposium read at a meeting of the Surgeons of the American Ambulance, Neuilly-sur-Seine, France, Crile discusses "The Vivisection of a Nation." He reverts very naturally to the *kinetic system* which he has studied so carefully in making his deductions regarding "anoci-association" and shows that this part of the human body is driven by stimuli from the internal and the external environment.

The organs comprising the kinetic system—the brain, adrenals, thyroid, liver and muscles—are subject to changes brought about by variations in the stimuli. These influences may be one or more of the following: exertion, fear, hunger, injury, worry, grief, homesickness or (an internal cause) a foreign protein.

It has been experimentally demonstrated a number of times by Crile, Cannon and others that as a result of excessive activation, the structure of certain organs is altered, and because of this, many brain cells may be permanently lost.

Hence, overwhelming activation of the kinetic system by any of the afore-mentioned emotions may cause very acute exhaustion, just as it has in many thousands of cases in Belgium, or, on the other hand, it may bring about such extensive physical changes in one or more tissues or organs as to cause chronic diseases, such as cardiovascular disease, diabetes, neurasthenia, insanity, and permanent loss of efficiency.

In the light of these findings, Crile has studied the phenomena exhibited by many Belgian refugees and concludes that as an immediate result of the invasion of their country, many of the populace died—there were numerous cases of insanity, of insomnia, of neurasthenia, of prostration and almost universally, there was impaired efficiency with a loss of hope and ambition.

It is well to remember that the influence on these emotions of the kinetic system is worthy of careful consideration in the diagnosis and treatment of many conditions

which are made daily in general practice. According to Crile a certain degree of this emotional activation causes a lowering of the threshold to stimuli or neurasthenia, overwhelming the activation causes insanity, temporary or permanent. Destruction of many cell units obviously results in permanent loss of efficiency. Such changes obviously shorten life, to what extent we cannot well determine at present. We may, with advantage, quote Crile's concluding words; "The crushing of hope, ambition and happiness, the impairment and destruction of life by this vivisection of an innocent people, is patent. Belgium has endured the equivalent of a surgical operation without the protection of local or general anesthesia."

Another Serum Reaction for Syphilis.

Before our present knowledge regarding the diagnosis of syphilis by means of the Wassermann reaction and other sero-diagnostic procedures, not infrequently recourse was had to the so-called "therapeutic test." It has long been known that one of the manifestations of syphilis is the reactivity of the system to mercury and the iodides.

Recently Landau has made this the basis of a new test which depends upon a specific behavior of syphilitic blood serum to iodine. The test, as suggested by this writer, has been used by a number of investigators and while it may not supplant the Wassermann reaction it is useful as an additional test and because of its simplicity may supplant the more complicated procedure, at least in general practice where it is not so convenient to make the Wassermann test.

The technic of Landau's reaction is as follows: 2/10 cc. of the serum to be tested is placed in a test tube 12 mm. in diameter and to this is added 1/10 cc. of a 1% of iodine in carbon tetrachloride (tetrachloromethane). This is agitated and then allowed to stand over night (it should be in contact at least 4 hours). After this 2/10 cc. of ammonia water is added. A positive test shows a clear and transparent solution, while normal serum produces a milk-white mixture. The explanation is based upon a presumed special affinity of the serum of syphilitic individuals for iodine.

Something New Under the Sun.—It has devolved upon the Christian Scientists to bring to light something new to the medical profession. We have long been taught not only that the diagnosis of disease involved much knowledge, study and intelligent observation, but that an accurate determination of the true nature of a complaint was necessary to its proper treatment. The character of a disease is often obscure, necessitating the most thorough consideration of a patient's symptoms and physical condition. Even with the most expert clinical study by one with extensive experience, resort must usually be had to the laboratory; and the painstaking employment of all physical means such as auscultation, percussion, palpation and inspection, coupled with a searching inquiry into the history, past and present. After exhausting all available sources of information the most skillful practitioner is still often in doubt as to the exact nature of a complaint, more particularly in the early stages. All uncertainty should be at an end, however, for a man writes to the *New York Tribune* that Christian Science can take cases "diagnosed by the *materia medica* as incurable" and readily effect their cure!

It is rather difficult to comprehend how diagnosis can be made by *materia medica*, which is ordinarily defined as the branch of medical science that treats of the origin and preparation of remedies, their mode of administration and dosage. What has *materia medica* to do with determining the nature of disease and how can appropriate treatment be instituted without the character of the disease being first accurately determined? To be sure, there is a standard work on "Diagnostic Therapeutics," but the principles it lays down would hardly warrant the conclusion that the diagnosis of disease is accomplished or made easy by the *materia medica*!

To discuss the matter more seriously, however, it is evident that the statement which gave rise to these remarks is only another illustration of "a little learning" being "a dangerous thing." The person quoted had heard the words "*materia medica*," and like many others jumped at the conclusion that they constituted a generic term covering all the activities of modern medicine. Under this interpretation of the words "*ma-*

teria medica," the writer of the statement in the *Tribune* evidently meant to convey by the expression "cases diagnosed by the *materia medica*," cases diagnosed by and treated with all the resources of medical practice. In other words, "*materia medica*" to the gentleman in question signified medicine as represented by the medical profession. That any person presuming to speak for the Christian Scientists should have no more definite knowledge of modern medicine and the function or field of its ordinary branches, is not calculated to create any great admiration or respect for the learning of the followers of the cult.

To be perfectly fair, however, no matter how ridiculous and irrational many of the contentions of Christian Science are to the regular physician, its adherents as a rule are not ignorant or illiterate. As a class the Christian Scientists may very properly be considered as well above the average in ordinary education and refinement. The apparent mental superiority of many of the devotees of Christian Science makes their belief and teachings particularly strange and unaccountable. How can people of even moderate learning or ordinary mental acuity believe or claim to believe the illogical and irrational doctrines put forth by the leaders of the Christian Science movement?

As long as adherence to their views causes no harm, no objection can be raised to these people entertaining any theories they may wish to, concerning the nature and causation of disease. But when their views lead them to acts that jeopardize the public welfare, then it is time to call a halt.

We refer particularly to the relation of Christian Scientists to infectious or contagious diseases. Denying the existence of all disease, they naturally repudiate the idea of infection. As a consequence numerous cases are on record where the followers of Mrs. Eddy failed to report scarlet fever, diphtheria, measles, etc., to the health authorities. The danger of such a course to the people at large can readily be seen, and it is this relation of the Christian Scientists to communicable diseases that more than anything else makes them a menace to society. Their leaders, whenever this question arises, are always ready to state that irrespective of their beliefs, they always teach their followers to observe the laws as to report-

ing contagious diseases, submitting to quarantine, etc. But this is open to question and if they are successful in getting their converts and followers to believe in the non-existence of disease, they probably can see little consistency in submitting to public health laws.

As a result of conditions in Europe, the people of the United States will from now on have to exercise greater vigilance than ever before against infectious diseases. The Christian Scientist will be more dangerous than ever, and will have to be kept under close surveillance to insure that he does not disregard the health laws of the community. In other words, the Christian Scientist may cherish any conception that he wants to in regard to disease, but the instant any member of his family contracts a contagious malady, he must act according to common sense and the facts of the situation.

A Court Decision of Unusual Interest.

—An interesting and far-reaching decision was recently handed down by a justice of the New York Supreme Court, annulling a marriage at the wife's request on the ground of concealment by the husband of the fact that he had tuberculosis when the marriage ceremony was performed. As concealment of a material fact by either party to a contract is wilful deception, and as active tuberculosis of one party, aside from jeopardizing the health of the other, may seriously interfere with the earning capacity of the one who has it, it can readily be seen that the deception resolved itself into a clear case of fraud. The deceit has a still more important consequence—one that bears more directly on the public welfare—in that children born of a tuberculous parent or parents may be specially predisposed to the disease and this predisposition in its practical effect on the offspring may be fraught with consequences almost as serious as the direct transmission of the disease itself.

The above decision, therefore, while seemingly harsh, is eminently just and right, for it seeks to protect the public as well as the individual.

The tuberculous patient has been forced to undergo much needless annoyance in the

past from foolish fears, but the annulment of a marriage contracted by a tuberculous patient who wilfully hides his condition, surely does not come within the category of persecution. The tuberculous patient has rights, but so also does he have definite obligations to the community, not the least of which is that he must not deceive anyone as to his condition when that deceit is liable to cause harm or injury to the one deceived. This is common sense and while in marriage both parties agree to take each other "for better or worse," neither one has a right to deceive the other as to his or her freedom from a disease, like tuberculosis, that may be dangerous, that may impair the sufferer's earning capacity, and that may jeopardize the health of future offspring. It is easy to imagine an instance wherein the person afflicted with tuberculosis might set up the defense that the presence of the disease was unknown, and even unsuspected. Under such circumstances—the absence of any proof that the disease was known to the afflicted one—the grounds for annulment would not exist. Contrary to the interpretation some have put on the case under discussion, it was not the first of its kind, nor was it based on eugenics. It was only one more instance of fraud—a cause that has led to many annulments in the past and that will probably lead to many in the future.

A study of stomach carcinoma made by Joseph Colt Bloodgood of Baltimore, and reported in the (*Journal of the American Medical Association*, June 29, 1915), discusses one hundred and eighty-four cases and emphasizes the fact that early diagnosis and the operation of gastrectomy afford the only means of reducing the mortality from the disease. The adult population should be informed through authoritative sources, that epigastric discomfort aggravated by eating solid food is sufficient warning; that such symptoms by no means prove the presence of cancer, or a disease that will ultimately end in cancer, but that as warnings they should impel those so suffering, not to seek treatment, but a thorough examination by a competent physician trained in the investigation of gastric

diseases. They should also be made to understand that a restricted diet and some medicine will give relief; but that if they are suffering from cancer of the stomach, or a condition which may ultimately result in cancer, such relieving treatment will only increase the danger. A thorough examination to disclose an accurate diagnosis is the essential point. They must be made to understand that a thorough examination will consist of repeated analyses of gastric contents with investigations with the fluoroscope or roentgenograms.

Persons so educated with this correct information, will have courage to act. The responsibility, then, falls on the physician. With the educational measures and a most careful clinical examination, with repeated gastric analyses and Roentgen ray studies, lesions of the stomach which should be subjected to surgical procedures will not be overlooked; comparative figures will then show an increasing number of gastric ulcers with microscopic changes suggesting early cancer, an increasing number of operable cases with masses in the stomach which are microscopically distinctly cancer, and an increasing number of permanent cures of the latter. With this earlier intervention, says Bloodgood, the mortality from gastrectomy will of course decrease. His splendid paper deserves careful consideration by every thoughtful physician.

Freud's Psychology.—"Although," says Dr. Meyer Solomon (*Medical Record*, Mar. 27, 1915), "I find serious defects in Freud's psychology (his theories and his conclusions) in many important respects, such, for example, as his theory of rigorous psychic determinism, his theory of universally acting psychic repression, his theory of the significance of the resistance met with in the course of association of ideas and the significance of amnesia, his theory of the endopsychic censor, his conception of the unconscious, his employment of phantastic and highly complicated symbolism, the loose reasoning by analogy or the proof by *post hoc, ergo propter hoc*, his explanation of the somatic symptoms of the psychoneuroses, his exaggeration of the rôle of

sexuality in normal and abnormal life, and his many conclusions of a decidedly practical, medical, and therapeutic bearing, let alone the theoretical and purely scientific importance—although, I say, I find serious defects in so much of Freud's theories and conclusions * * * I shall in this paper, confine myself religiously to the question of sexuality." (which is also objected to).

Thus we conclude that, with the above exceptions, Dr. Solomon considers Freud's theories all right.

Quinine in Dysentery.—Major Brooks, U. S. Army Med. Corps, recommends quinine in amebic dysentery and draws the following conclusions (*Jour. A. M. A.*, Mar. 28, 1915). "1. In the early stages of entamebic dysentery, ipecac, or preferably its alkaloid, emetin, given hypodermatically, would appear to have a specific action on the disease. 2. In chronic cases, ipecac is a valuable remedy and will cure many patients, but not with the promptness and certainty that it does in the acute phases of the disease. 3. Quinine sulphate by mouth in doses of 2 gm. per day would appear to be as efficient as ipecac in the treatment of entamebic dysentery. 4. Quinine is always available, is much cheaper than emetin, and, in most cases, can be given with less discomfort to the patient than ipecac or its active principle."

THE CONVALESCENT.

Could I but rise up from this bed
And walk across the floor,
I'd count myself a happy wretch
And ask for nothing more.

Could I but venture out-of-doors
And mingle with the throng,
A greater boon I could not crave—
I'd smile the whole day long.

Thus in our many ills and pains
Real blessings will we find,
They make us prize the little things
To which in health we're blind.

Alan Campbell.



THE FUTURE OF POSTGRADUATE OPHTHALMIC EDUCATION IN AMERICA.¹

BY

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Bacon, in one of his essays, says with his usual perspicacity "*Education is the cultivation of a just and legitimate relation betwixt the mind and things.*" Observe, he does not say betwixt the mind and books, betwixt the mind and knowledge, betwixt the mind and science, betwixt the mind and philosophy, betwixt the mind and metaphysics. He goes deeper and with the simplicity of greatness, he includes it all in the one simple expression, "betwixt the mind and things." This might well be applied to the present trend in postgraduate ophthalmic teaching. The wide-awake ophthalmologist of today must be something of a physicist, something of a pathologist, something of a neurologist, something of a psychologist, something of a sociologist; he must have a working knowledge of color science, of modern illumination and hygiene of the eye, also surgical ability of high degree, and to cap it all he must be an all wise medical practitioner with endless therapeutic resource, including serology and organotherapy. This is a large order, it must be admitted, but it comprehends pretty fully all that is meant when we speak of up-to-date postgraduate ophthalmic education.

If we consider for a moment how the fathers in ophthalmology arrived at their fullest development, we discover at once the fifteenth century relation of master and pupil. A system that produced von Graefe,

von Arlt, Jaeger, Donders, Landoldt, Snellen, Javal, Schiötz, Mackenzie, Bowman, Crichtett and all the other stars of the first magnitude has more than justified itself and we can but regret that it is not generally applicable to the present day evolution of ophthalmic science. Each of the various groups or schools in the various countries was but the lengthened shadow of some great man. The higher sacred knowledge was given to but few and was handed down from master to pupil. This was the esoteric phase of our science. And to a certain extent it endured almost to the present generation and included in a sense, at least, some of our well known American ophthalmologists such as Williams of Cincinnati, Knapp and Gruening of New York, the elder Derby of Boston, Chisholm of Baltimore, Williams of Boston, John Green and Alt of St. Louis, Hotz of Chicago and others. When we come to consider the present generation of ophthalmologists, we find new influences at work. Ophthalmologic societies were formed, and to afford avenues for the dissemination of their ideas, ophthalmic magazines were founded. The aristocracy of education had passed. The sacred knowledge could no longer be confined to the chosen few. It was the era of the diffusion of knowledge. The exoteric phase of our science was ushered in and democracy in education became an established fact. Postgraduate schools were established in various cities in our country and recently several universities have announced courses in ophthalmology. All of these various factors, plus training and observation in European clinics, had their part in the making of the present generation of ophthalmologists. There was no uniformity of method. Each one developed his ophthalmic personality according to the dictates of his ambitions or his pocketbook. The standard was an arbitrary one based on individual

¹ Address, (by invitation) before the Chicago Ophthalmological Society, January 18, 1915.

conceptions. The demand for thoroughly equipped men was so great that many did not perfect themselves as they should. Short courses were taken at postgraduate schools and there were those who developed their ophthalmic bent by study, observation or personal experience alone. In 1890 there were probably 500 medical men in the country who were recognized in their particular localities as doing ophthalmic work of worth. In the past 25 years this number has increased more than tenfold, so that there are today in the United States more than 5,000 listed ophthalmologists. This would equal a proportion of about one to each 20,000 of population, a proportion that must not be much exceeded if each one of these workers is to flourish according to his deserts. Dr. Edward Jackson in his address before the section on Ophthalmology of the American Medical Association at its 1912 meeting estimated that there should be about 10,000 trained workers in ophthalmology in the United States at present, allowing one such worker to each 10,000 of population. He further estimated that to keep this body of workers continually at this number, about 400 men should be trained or accredited for this work annually. Admitting that my own estimate may be a trifle generous (1:20,000 of population) it is altogether likely that if the present rate of increase obtains, the year 1925 will see 10,000 more or less trained workers in ophthalmic science at work in this country and the proportion of 1:10,000 as set down as normal by Dr. Jackson will have been reached. Only ten years,—if you please—before we are on the verge of a plethora of ophthalmic workers; and ten years are as but yesterday in the sight of this busy 20th century!

So that we are even now face to face with the question as to how these on-coming 5,000 special workers shall be trained. This question concerns not only the welfare of these 5,000 prospective ophthalmologists themselves but also the welfare of the body ophthalmic in this country. There can be but two attitudes taken toward this problem, either that of utter selfishness which exclaims "after me the deluge"; or that of the far seeing scientist who builds hopefully upon the work of his predecessors, encouraged always by the thought that he may accomplish something for posterity. It is

idle to heed those who retort flippantly "posterity? What has posterity done for me?" Consider the fathers in ophthalmic science, how they delved, in the hope that our science should be handed down to us in its present wonderfulness. Can we remain unmoved as we gaze upon this precious heritage of yesterday? Or shall we highly resolve that those who come after us shall have opportunities of which we do not even dream? This is what is comprehended by the phrase "the welfare of the body ophthalmic in this country." I am far from advocating trades-union ideas. I would simply lay before you this proposition:

Can we in the next ten years produce 5,000 properly trained ophthalmologists and then keep the total 10,000 steadily recruited to that number? Moreover, in the light of present day developments *what is a properly trained ophthalmologist?* This brings before us squarely the question as to what in future shall be the training of the prospective ophthalmic worker?

Those who have taught and written on the subject have allied themselves largely with one of three propositions: (1) Extension of undergraduate teaching with the end in view of turning out the graduates as a fairly well-equipped ophthalmic practitioner. Some have advocated a fifth year in the regular medical curriculum as absolutely essential to complete training in this branch of medical science as well as broadening the student in medical science in general. (2) To attempt by legislation to fix the conditions under which ophthalmic training may be given. (3) To extend the term of postgraduate instruction to 4 months, 8 months or even 2 years; in the event of the longer terms, the conferring of a certificate or some manner of degree upon production of satisfactory evidence that the work has been properly done.

Extension of Undergraduate Teaching in Ophthalmology. The present allotment of sixty hours in ophthalmology in the senior year, fixed by the majority of American medical colleges (fifty by the Council on Medical Education of the American Medical Association), permits the student to gain fair familiarity with external eye diseases, a slight acquaintance with the ophthalmoscope, some understanding of the significance of the more important eyeground changes, a vague idea of the refractive

status of the normal and the abnormal eye, a relatively definite idea of lenses and their use in the correction of refractive errors. Attendance upon ophthalmic operations and performance of these operations on animals' eyes may be added to the foregoing list, but it is doubtful indeed whether the possessor of this much knowledge of ophthalmic science could manage anything but the simplest ophthalmic problems.

As distinguished from general medical practice, ophthalmic practice with all its refinements occupies a peculiar position. It resembles laboratory work in that instruments of precision are in use every minute of the working day. The ophthalmoscope is a low-power hand microscope. Its use implies fine technic and, when after three to six months' training its easy use has been learned, another six to twelve months is necessary before the observer can even attempt to interpret what he sees. The ophthalmometer deals with infinitely small differences in the curve of the cornea. The test lenses determine even more accurately these curvature differences. The various instruments for detecting abnormal states of the ocular muscles are all devices of great precision. The perimeter is no less precise in its findings. The tonometer, the exophthalmometer, the stereoscope, the photometer, the microscope are all laboratory devices that the ophthalmologist calls to his services. Nearly all the operations in ophthalmic surgery call for this same precision, many of them requiring the use of magnifying instruments to be worn by the surgeon for the proper performance of the operation. Without some knowledge of physics and physiologic optics there can be no intelligent use of this working laboratory, and when the findings have been completed they must be viewed in their relations to the patient's general condition. Only in this way can it be decided whether the ocular anomalies are primary or secondary.

To expect the undergraduate to familiarize himself sufficiently with this ophthalmic laboratory outfit even in a fifth clinical year is asking a great deal. With the present four-year curriculum administered as it is, such a hope is baseless. The most that can be hoped for from the present undergraduate is that he shall be able to diagnose and treat external eye diseases, that he shall know the appearance of the normal eye

ground and appreciate the significance of inflammatory or degenerate changes in the intra-ocular structures when they are properly reported to him, and that he may be able to cope with some of the simpler problems of refraction. We would add as a demurrer, however, our belief that most problems in refraction are complex ones and at times very puzzling ones indeed.

Also he might properly do some ophthalmic operations such as canthotomy, slitting the canaliculus, passing lacrimal probes, and even enucleations.

In Pennsylvania the new Medical Practice Act provides that every graduate of a medical college must perform a year's service as interne in an acceptable hospital before he can present himself before the State Board of Medical Licensure for examination for the license to practice medicine. This admirable step forward will, we believe, be soon adopted by the majority of State Examining Boards. As the pre-medical year is now compulsory in most of the states it is but a short while before the regular medical course will comprise six years. This sixth or hospital year, which becomes what might be called a probationary year, can then be beautifully adapted to the system of electives.

The report of the Committee on Education in Ophthalmology of the Section on Ophthalmology of the American Medical Association for 1914 says: "Under present conditions, elective work in ophthalmology is to be considered only in the fourth or subsequent years of the medical course, and in the fourth year only for those who have done satisfactory work in all branches in their earlier years and can take elective work and still do justice to the required curriculum."

To me the elective system has always been alluring, but under existing conditions I have never been able to bring myself to the point of downright advocacy of it. Is it likely that the general body of educators would endorse the elective system for undergraduates? I doubt it and even though they did, I should have a hard time persuading myself that it didn't predispose toward that very one-sidedness that has been the constant reproach of our particular branch of medical science.

With the sixth or hospital year this objection falls. The interne could very well

elect what branch or branches of medical science he would prefer to follow, although even this has some disadvantages.

The report of the Committee on Education in Ophthalmology of the American Medical Association goes on to say further:

"The special instruction in ophthalmology which all medical students should receive should begin in the third undergraduate year of the medical course. Before the close of that year they should gain such a general view of the subject, and such facility in methods of diagnosis, as will enable them to profit by their subsequent opportunities for clinical work. The sixty hours' total assigned to ophthalmology in the general curriculum is inadequate. More time up to 120 hours seems necessary.

In the fourth year the required work in ophthalmology should be clinical, an extreme minimum of thirty hours, or preferably sixty hours and it should be given to small groups of students daily, or each clinic day, so that cases may be watched during their course. It may be given wholly in an out-patient department, since the diseases and procedures with which it is important for every medical student to be familiar are represented in such a clinic. This, however, should be supplemented by the use of the ophthalmoscope in hospital cases and in medical out-patient clinics.

The foregoing training in ophthalmology should be given to every candidate for the degree of doctor of medicine."

This is all very well from our own standpoint; but from what portion of the recognized curriculum is this 60 hours to be taken? Will there not be a protest from the remainder of the teaching body that ophthalmology is being too much emphasized at the expense of the rest of the curriculum? And if we rejoin that the elective system would care for this dilemma without making too great incursions into the general course, we shall lay ourselves open to the stricture uttered by President Wilson during his Princeton administration when in discussing the elective system as applied to the general collegiate courses he said "he feared the side-shows might eat up the main circus!"

On the other hand it is absurd to attempt to divorce undergraduate work from post-graduate work, even though we recognize, as Hiram Woods insists, "that a student

cannot be made a competent ophthalmologist at graduation by any system available." If the undergraduate teaching body in the United States will devote itself to what Osler has so aptly termed "*method*," which after all is all we can teach students," the graduate in medicine will find himself fairly well prepared to enter upon post-graduate study in any branch of medicine. Viewed from the standpoint of a broad medical education rather than from that of the teaching ophthalmologist, more could not be asked.

As above stated, the licensing board of Pennsylvania now requires that every candidate, to be eligible for a license to practice in that state, must have served at least one year as an interne in an approved hospital. Five medical schools outside the state of Pennsylvania have adopted this requirement, namely:

University of Minnesota, Session of 1910-11.

Leland Stanford, Jr. School of Med. Session 1914-15.

Rush Medical College (University of Chicago), Session of 1914-15.

Univ. of Vermont Med. College, Session of 1915-16.

Northwestern Univ. Medical School, Session of 1915-16.

If the fifth or hospital year becomes compulsory the country over, as we hope and believe it will, then the elective system will find a fruitful field. Such elective work could be made to include the minute anatomy of the eye and its embryology, experimental physiology, especially physiologic optics, laboratory work in the bacteriology and pathologic histology of the eye, clinical studies of ocular and neurophthalmic symptoms, and the relation of the eye to general diseases. From those who have done the required clinical work, student-assistants should be appointed to serve under supervision in the eye clinic. To this reference will be made later on.

The next proposition to attempt by legislation to fix the conditions under which ophthalmic training shall be given, can be quickly disposed of. At first blush this would seem to be the solution of the whole question. But immediately we are confronted with the bewildering problem of forty-eight states each with its own state board and standards, each supreme in its right

to define the scope and limits of medical practice within its own confines. Success for our project evidently does not lie in this direction. It will, moreover, readily occur to everyone that any man who has been licensed to practice medicine in any state, *may engage in ophthalmic practice* to his heart's content provided, of course, that he does not go to the point of laying himself open to legal action. And even in this event, if he can prove to the court that he is "what he holds himself out to be" (as most of the legal statutes phrase it) he can continue as something of a menace to his community by reason of his imperfect work. At present the community is without redress except in cases of gross incompetence legally proven.

We turn therefore to the third proposition: *to extend the term of postgraduate instruction to four months, or eight months (an academic working year) or even two working years.* The present idea seems to be that if two years of postgraduate work are spent in preparation, and proof of sufficient work is given before some kind of National or Federated Examining Board, a certificate or degree should be granted setting forth that such work has been done and accrediting the candidate to any community as a thoroughly prepared ophthalmic worker or specialist.

Advocates of this proposition point to the fact that five years ago in England the University of Oxford established a three months' course of postgraduate study leading up to the degree of D. O. Oxon, and that the University of Liverpool soon afterward followed in its footsteps. One of our own educational institutions, the University of Colorado is still in the experimental stage with a one year's course in postgraduate ophthalmology leading up to the degree of "doctor of ophthalmology." There is doubt in some quarters as to whether a one (working) year's course will be properly supported by the general medical profession at present. However, if the men who contemplate going to Europe to study anywhere from 1 to 2 years can be shown that they can get equally as good, if not better, instruction here in America, (*and that in their own language*), it would seem that sufficient support can be given a one year's course in a number of institutions in this

country to more than justify the outlay of energy necessary to it.

Shall such a course be given as postgraduate instruction in some of the universities or shall it continue to be given in the already established postgraduate schools?

If it is given in some of the universities it will be some time before the postgraduate instruction to cover a year or two years' time can be so organized as to be worth the student's while. Much time and effort will be required before a teaching body can be rightly built up and develop an *esprit du corps*. Then there is the fact, seemingly overlooked by many, that undergraduate teaching and postgraduate teaching are two entirely different propositions. The man who may be ideally fitted for undergraduate work may fail conspicuously as a postgraduate teacher and vice versa. Too, postgraduate teaching calls for a much wider range of clinical material than does undergraduate instruction; in fact there cannot be too great a wealth of clinical material, as every phase of our science should be presented at some time during the course. For this reason only universities in large cities could hope to furnish adequate clinical facilities. This will explain why the already established postgraduate schools in the large cities have gained a numerous following.

When the postgraduate schools were first instituted there was much acclaim and beating of tom toms. Authorities vied with each other in sounding their praises. French politeness was outdone. There was so much bowing and scraping and "Après vous, Monsieur," that the still small voice of criticism was swallowed up in the polite uproar. Now the pendulum has swung the other way.

In recent years it has become quite the fashion to berate the postgraduate schools for their sins both of commission and omission. They have been charged with all manner of things which if properly analyzed would be seen to be but the inevitable products of the times. The men who attended them have been made up largely of three classes: (1) those general men who wished to know just enough of the commoner diseases of the eye to enable them to minister in some measure to the ophthalmic pa-

tients in their locality who had no special worker to whom they look in such matters; (2) those men who would take a 6 or 12 weeks' course one year and return the next year and perhaps still another year for more and more instruction, meanwhile by reading and observation equipping themselves better for their life work. Many of our ablest ophthalmologists in the smaller cities of the country today owe their advancement to this method; (3) those who devoted say 6 months in one postgraduate school and then 3 to 6 months in another; this work to be supplemented by residence as interne in a special eye-and-ear hospital, or extended study in European clinics. Most of the teachers in ophthalmology in America today have had some such experience. So that in time, gone the 6 weeks' course not only had its place but was an absolute necessity to those practitioners whose ophthalmic undergraduate education was lacking. With the improved undergraduate methods of today the 6 weeks' course is no longer necessary; and 2 years ago the Philadelphia Polyclinic announced that its minimum course in ophthalmology would be 3 months. It has now taken another step forward and announces that after October 1, 1916, no courses of less than 4 months will be offered. Two thoroughly graded 4 months' (all day) courses will therefore fill up each working year.

If there is one thing more apparent just now than any other in this field it is the need for a uniform standard in postgraduate ophthalmic instruction, and this we believe is close at hand. If the 4 months' (all day) course is made the uniform standard, many advantages are at once apparent. For instance, in a 4 months' (all day) course, the first month could well be devoted to the necessary physics and physiologic optics, the theory of all ophthalmic instruments of precision, the finer anatomy of the eye along with its histopathology and bacteriology, and the anatomic relation of the eye and orbit to the surrounding cavities. The remaining three months would be devoted to the clinical application of these truths along with the surgery of the eye and its relation to general diseases. Naturally much consultation of ophthalmic text-books and magazines should be required during this period in order that the student should acquire the scientific habit of mind. If this is

done by the rising generation of ophthalmologists, it will go far toward correcting the evil to which Wurdemann alludes. (*The Ophthalmic Year Book*, 1911, pages 352).

Out of the 5,000 physicians listed in the directory of the American Medical Association as ophthalmic workers, Wurdemann estimated that only about one-fourth of that number are sufficiently familiar with the literature of ophthalmology to entitle them to the confidence of the public and the general practitioner. If the 5,000 men who are presumably practicing ophthalmology in this country were to thoroughly familiarize themselves each year with the two *American Year Books* concerning their science, the forward stride taken by American ophthalmic science would amaze the world.

We come now to consider how much time shall be spent by the postgraduate student who hopes or expects to become a recognized ophthalmologist. No subject has received more discussion in ophthalmic and general journals the past ten years than this one. For intending specialists Duane (*Journal Amer. Med. Assn.*, April 8, 1911) would develop a thorough plan of training along the following lines: Attendance at special elective courses in either the undergraduate or postgraduate year; after graduation at least two years of general medical and surgical work (preferably in a hospital) a further year of postgraduate work at the university in the theory and practice of his specialty; a thesis, and the passing of a satisfactory final examination leading to a degree. Jackson (Section on Ophthalmology *Amer. Med. Assn.*, 1912) advises against any rearrangement of medical studies which will too greatly postpone the age at which the specialist enters on his life's work. His article on "The Best Time to Prepare for Special Practice," (*Trans. of the Amer. Acad. of Ophthalmology and Oto-Laryngology* for 1913) is well worth careful perusal by every one interested in this subject.

The mode of preparation for ophthalmic practice was the subject of a series of papers prepared for a conference of American Teachers of Ophthalmology, held at Minneapolis in June, 1913. The lines along which ophthalmologists already in active practice had prepared themselves for the specialty were analyzed by Dr. Jackson. On the basis of 250 replies received to a circular letter of inquiry; 87.2 per cent. had

spent more or less time in study in postgraduate schools, eye clinics or eye hospitals; 46.4 per cent. mentioned work as assistant in the private practice of an ophthalmologist as an important part of their preparation for ophthalmic practice; 25.2 had served as internes in ophthalmic hospitals, and 62.2 per cent. as assistants in eye clinics. The average period devoted to preparation was about three years, although in many cases the time had been devoted to the combined study of diseases of the eye, ear, nose and throat. Casey Wood emphasized the vital importance of the teaching of ocular pathology, which he would entrust in every instance to a trained specialist, rather than a general pathologist. Two separate courses should be given, one for ordinary undergraduates, and a more extensive one for postgraduates and also for undergraduates who have already elected for a career in ophthalmology. The more elaborate course should include at least twenty-five laboratory periods of two hours each.

In the same conference Allport complained of the difficulty of securing proper training for ophthalmic practice in medical colleges as at present organized, and protested against the view that ophthalmology is a highly specialized specialty in which the general student and practitioner have but little interest. Davis would give a specialized course of, at least, six months to a year's duration, issuing a certificate of proficiency, or a diploma, after the student has passed a satisfactory examination. Zentmayer proposes that the final year in the undergraduate course which now becomes the interne year, should be given over to elective special work, and that a second year should be taken in a postgraduate school, along lines which he elaborates. He attaches more importance to a knowledge of *applied optics* than to the detailed teaching of physiologic optics. He further urges that the teaching of ophthalmology should be divorced from that of the nose and throat.

In his address as chairman of the Section on Ophthalmology of the American Medical Association, Hiram Woods reviewed the lines along which ophthalmology is more recently being taught to medical undergraduates. Regarding physiologic optics as the most important part of ophthalmology,

Lancaster would make it the basis of the teaching course, which in his opinion should occupy not less than from 300 to 500 hours. Of this time, he would apportion from 150 to 250 hours to dioptrics and errors of refraction, and 100 to 150 hours to ocular muscles and binocular vision, leaving 100 to 150 hours for other aspects of the subject. Since this time Lancaster has modified his views on this subject. The University of Liverpool diploma in ophthalmic surgery (D. Ch. O.) requires a three months' course of study in the university in anatomy, physiology and pathology of the eye; not less than three terms of instruction in an ophthalmic clinic recognized by the university; one term of lectures on the diagnosis and treatment of diseases of the eye, and subsequent examination (see *Ophthalmic Record*, vol. xxii, p. 698). Dr. Todd in his address at Atlantic City last summer advocated Research Fellowships as a means to this end and it is to be earnestly hoped that this idea will meet with general acceptance and development.

By this time (June, 1913) interest was so much aroused that committees to deal with the situation were formed in the three National Ophthalmic Bodies, namely: The American Ophthalmological Society, the Section on Ophthalmology of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology. The committee of the American Ophthalmological Society reported back at the meeting at Hot Springs, W. Va., last May from which we quote as follows: "The committee approves the idea that in all universities and medical schools of the first class a course shall be arranged to give graduates of standard medical schools the best assistance in preparing for ophthalmic practice with the greatest economy of time; to give those already engaged in ophthalmic practice similar assistance in making up for educational defects which were inevitable when no systematic supervised course of the kind was given; and to render accessible to those already engaged in ophthalmic practice, recent advances in ophthalmic science and art. Inasmuch as the applicant for a course of this character must have the degree of M. D., he must also have passed the entrance examination of the school from which this degree was obtained, and therefore have received the preliminary

education which such passing has required. The committee suggests that it is desirable that during such preliminary education he should become familiar with algebra through quadratic equations, geometry, (plane and solid), plane trigonometry and should acquire a fair knowledge of optics. As to postgraduate ophthalmic work for a *special degree in ophthalmology*, the committee agrees to recommend that two years shall be devoted to the course; that is, this period of time shall be devoted to the study of ophthalmology and subjects directly related to it, with the understanding that a reasonably liberal amount of this time shall be devoted to clinical ophthalmology in any ophthalmic hospital having proper facilities for the study of clinical ophthalmology and with the requisite clinical service. It is recommended that the course of study during these two years in general terms shall include an academic and a laboratory period, during which the following courses should be available:

1. A course on the cadaver in the anatomy of the head, and therefore including the eye and its appendages, dissection of the accessory sinuses and regional anatomy of the brain; the embryology and histology of the human eye; also comparative anatomy and histology.

2. A course in physiologic optics and the physiology of vision with opportunities for work in comparative physiologic optics.

3. A course in practical ophthalmology, which should include a full measure of time devoted to the refraction of the eye, to learning the use of instruments of precision in ophthalmic work, to work in theoretic and experimental dioptrics, to work in anomalies of muscle balance, and to diseases of the eye and to medical ophthalmoscopy.

4. A course in the surgery of the eye, which should include work in perfecting operative technic on the cadaver or and with animals' eyes, supervised by a teacher competent to instruct in this branch.

5. A course in pathology of the eye, covering practical work with the microscope and including a course in bacteriology and work in the theory of serum and vaccine therapy.

6. A course on the diagnosis and treatment of syphilis, in which special attention shall be paid to the pathological condition

which it creates in the eye and the nervous system.

Character of the Degree. Although among oculists at large there is some difference of opinion in regard to the character of the degree which shall be granted after proper examination on the subjects already named, the opinion of a majority of the committee is that the title, if gained, should be master in ophthalmology and not doctor of ophthalmology, because in the opinion of a majority of the committee the title master of ophthalmology is the more dignified of the two, largely for the reason that it comes less in conflict with other titles that are now being conferred, sometimes regularly, for example, doctor of hygiene or diploma in public science, and the like, and sometimes irregularly by certain organizations in this country, which might readily be confounded with the degree of doctor of ophthalmology, for instance, the so-called degree D. O., which stands for doctor of osteopathy.

Examinations and Requirements for Obtaining the Degree of Master in Ophthalmology. (1) It is recommended that the candidate shall present a thesis covering original work, which shall not be accepted by the board of examiners unless it is of sufficient worth to be published.

(2) The candidate must pass a satisfactory examination in all the various courses outlined in the previous recommendation, and before he presents himself for examination he shall be able to exhibit a certificate or certificates showing that he has done a suitable amount of clinical ophthalmology in a hospital or institution, recognized by the examining board as competent to supply the necessary opportunities.

(3) The candidate shall be permitted to offer work done in subjects a list of which is the following:

- a. The embryology or histology of the eye.
- b. The comparative anatomy of the eye.
- c. Comparative physiologic optics.
- d. Original laboratory investigations of the anatomy or physiology of the human eye.
- e. Original laboratory investigations on the transmissible diseases of the eye, or other pathological ocular conditions.
- f. Original investigations into ocular symptoms or conditions resulting from, or

related to, any disease of other organs of the body..

(4) The candidate shall, if he desires, be examined on any one of these subjects, and the time he has spent upon them and the character of the examination which he passes upon them shall be accepted by the board of examiners as evidence of his availability for the degree and counted accordingly, with the understanding that this does not in the least excuse the candidate from any necessary knowledge on the other subjects which have already been outlined, to wit: (1) The dioptrics of the normal and the abnormal eye, including practical work in the refraction of the eye and the anomalies of muscle balance; (2) abnormalities and diseases of the eye and its appendages, their etiology, pathology, diagnosis and treatment; (3) the relation of ophthalmology to general medicine; (4) clinical tests to illustrate the candidate's competency in 1, 2 and 3 of the previous recommendations; (5) an examination in ophthalmic surgery. The examination shall be written or oral, or both, and practical.

(5) The candidate for the degree of master of ophthalmology, it is recommended need not necessarily take all of the courses above recommended consecutively or in one university or recognized ophthalmic hospital. For example the candidate may take part of the course in one city and part in another, but the final half year of his two years' course must be taken consecutively in that university or school from which he is to receive his degree after passing the final examination.

Finally the committee suggests that the examining board of the university or school which grants this degree shall include a representation from the department of physiology or anatomy, the department of pathology or bacteriology, the department of medicine or surgery, and in addition one or more representatives of the department of ophthalmology. In other words it is desirable that the examining board shall not be composed exclusively of representatives from the ophthalmic department."

G. E. DE SCHWEINITZ, *Chairman*,
MYLES STANDISH,
S. D. RISLEY,
EDWARD JACKSON,
JOHN WEEKS,

Committee.

The following month the committee of the Section on Ophthalmology of the American Medical Association brought in a splendid comprehensive report from which we quote as follows:

"It is conceivable that every postgraduate school engaged in the teaching of ophthalmology might issue its own certificate of proficiency, but experience in the matter of medical diplomas shows that such certificates would be of extremely variable significance, indicating but little more than the fact that a certain amount of time had been devoted to this study under certain teachers. The granting of a degree by well-known established universities after a sufficient term of resident study, the passing of appropriate examinations and the writing and defence of a thesis will give a better assurance of attainment to the desired standard. Established universities, however, are slow to admit new lines of work, and a comparatively long time must elapse before any considerable proportion of those entering on the practice of ophthalmology will seek such academic evidence of proper preparation for their work.

A way of recognizing proper preparation for ophthalmic practice lies more directly within the power of this and similar professional organizations. The experience of the Royal College of Surgeons of England and the Royal College of Physicians of London points the way to a practical method of certifying the proper preparation for ophthalmic practice. The conjoint examining board draws examiners from twenty-one independent schools of medicine. Its examinations lead to no degree. Many who take them already have a right to practice. The expense of the examination is large (\$210 in fees, apart from the expenditure of time required). And yet a large proportion of those entering on the practice of medicine and surgery in Great Britain take this examination, although about 40 per cent. of the candidates are rejected. The certificate thus obtained is recognized throughout the profession and by public authorities as evidence of proper preparation for professional work.

From a careful review of the conditions existing in this country we are of the opinion that a somewhat similar examination board to determine fitness for ophthalmic practice in America is practicable, and of-

fers the best means for ensuring a comparatively thorough preparation on the part of those who offer themselves to the medical profession and the public as skilled ophthalmologists.

To bring something of this kind about, we recommend that a committee of the Section on Ophthalmology of the American Medical Association, invite the cooperation of a similar committee of the American Ophthalmological Society, and the American Academy of Ophthalmology and Oto-Laryngology, in working out a practical plan for the organization and support of a conjoint board to have charge of the examination of candidates who have prepared for ophthalmic practice. Under such a board, examinations, written, oral, laboratory and clinical, could be held at convenient times in any of our large cities. The examinations could have comparatively uniform character and significance.

In their summary the said committee recommend:

1. That a course of postgraduate study covering at least 2 years including systematic reading, laboratory courses and one full year of clinical ophthalmology under competent teachers, be required, before any recognition of special fitness for ophthalmic practice be granted.

2. That to examine as to the fitness for practice of candidates who have undergone such preparation, a board of examiners directly controlled by the profession be established by conjoint action of the special organizations of American ophthalmologists."

Signed

HIRAM WOODS,
WALTER R. PARKER,
WILLIAM ZENTMAYER,
WILLIAM H. WILDER,
ALEXANDER DUANE,
EDWARD JACKSON, Chairman.

In October of the same (last) year, the committee of the American Academy of Ophthalmology and Oto-Laryngology at its Boston meeting made the following report:

"The present chaotic state of postgraduate teaching of ophthalmology in the United States is now too widely admitted to need any extended discussion of the subject in this report.

The trend of sentiment indicates plainly that two years of systematic postgraduate

study should be the prime requisite for any recognition of that degree of skill and fitness for ophthalmologic practice that would justify *special recognition of some kind*. Just what form this 'special recognition' should take will be dealt with further on.

This is not the time nor place to enter upon a detailed curriculum, but your committee feels that the following essentials must be embraced in a systematic graded course:

1. A practical anatomical course on the eye and its appendages, the accessory sinuses, and the regional anatomy of the brain.

2. The anatomy and histology of the eye on a comprehensive basis.

3. Work in physics and physiologic optics supplemented by laboratory and clinical study of the refraction and accommodation of the eye; and the principles governing the various instruments of precision used in ophthalmic practice.

4. A course in the pathology and bacteriology of the eye including the theory of serum and vaccine therapy.

5. A course in ophthalmic surgery which should cover practice on animals' eyes and the cadaver; also if possible operations on living animals.

6. A course on motor anomalies of the eyes which should be both didactic and clinical.

7. A didactic and clinical course on external diseases of the eye.

8. A didactic and clinical course on ophthalmoscopic diseases of the eyes.

9. A course on ophthalmology and perimetry.

10. A course of lectures on color theories, color vision and testing, modern illumination and hygiene of the eye.

11. Clinical work for not less than one year which should include all the departments above mentioned as well as history taking and ocular therapeutics.

To test the fitness of the candidates who have met the requirements above set forth and to properly certify them to the medical profession and the community at large, your committee would urge the formation of a federated board of ophthalmic examiners to be composed of nine members, three to be named by each of the national ophthalmic bodies; namely, the American Ophthalmologic Society, the Section on Ophthal-

mology of the American Medical Association and the American Academy of Ophthalmology and Oto-Laryngology. This examining board should have complete charge of the examinations of candidates who have prepared for special recognition.

Your committee is unanimous in the belief that all interests will be best subserved by the granting of a *certificate* by the board rather than any degree. This will leave to the schools or universities doing postgraduate teaching the privilege of granting any degree that in their judgment may seem fit to meet the peculiar needs of the case. At present no degree has been mentioned that meets with anything like general acceptance.

It will be peculiarly within the functions of such an examining board to allot appropriate credits to those who have worked or studied in postgraduate schools, to those who have worked in recognized ophthalmic clinics, and to those who have studied in European institutions, also to provide the details for allotting accumulated credits until they shall have reached a total of 2 years.

Your committee is unanimous in its agreement with the committee of the American Ophthalmological Society, and that of the Section on Ophthalmology of the American Medical Association, that an examining committee of the kind described is thoroughly practicable and offers the best means for ensuring a comparatively thorough preparation on the part of those who offer themselves to the medical profession and the public as skilled ophthalmologists. The certificate of such a federated board backed by the influence of these important associations, while conferring no academic degree, would surely have great weight with the profession and the public, and would soon come to be sought by most of those desiring to enter the practice of ophthalmology.

Finally your committee would recommend that a conference be arranged with the similarly constituted committees from the American Ophthalmological Society and the Section on Ophthalmology of the American Medical Association with the express purpose of taking steps toward the formation of a Federated or National or Conjoint Examiners' Board."

Signed

EDWARD JACKSON,
WALTER LANCASTER,
WENDELL REBER, Chairman.

Inasmuch as each of the three committees had been continued and instructed to arrange a conjoint meeting, this was effected at Boston after the academy committee had received its final instructions, the following persons being present:

Dr. Edward Jackson, Dr. Hiram Woods, Dr. Walter Parker, Dr. Frank Todd, representing the American Medical Association, Dr. Miles Standish and Dr. Walter Lancaster, representing the American Ophthalmological Society, and Drs. Jackson, Lancaster and Reber, representing the American Academy of Ophthalmology and Oto-Laryngology. Dean Arnold of the Medical School of Harvard University was present by invitation.

Dr. Edward Jackson of Denver, Colo., was elected president of the conjoint committee with Dr. Walter Lancaster of Boston as secretary. There was much informal discussion of the duties ahead of the committee and the best means of meeting them, but no formal action was taken as it was felt that it would be wise to report back to each of the three national bodies that the committee had been formed and that they awaited further instruction from the constituent bodies.

This is the present status. That it represents much progress no one can deny. That it imposes severe training is equally true but it will be well worth while. When the interne year becomes a uniform requirement the country over, as it soon will be, the intending ophthalmic specialist can elect ophthalmology during his interne year and the conjoint committee will probably decide to accept this as the first year of preparation. Then one full year of clinical ophthalmology under competent teachers will be all that will be required of any one who desires special recognition with which to be accredited to the profession and community in which he elects to practice.

The conjoint committee does not anticipate any wild stampede of candidates for their certificate. A certain number of men will still go to the postgraduate institutions who will be satisfied with a lesser de-

gree of proficiency and they will have nothing to have framed and hung up in their offices to show for their pains. But with the establishment of a uniform high standard there will be an increasing number of men who will press forward toward it and desire the highest recognition that can be given. For these the postgraduate schools can provide that the first four months' course shall be fulfilled as above specified. Then in the first month of the second half of the year, the prospective candidate shall devote himself to the preparation of a thesis, looking up the literature and working at the subject of his thesis from the laboratory or clinical standpoint or both. The final three months can be spent in general clinical work in ophthalmology, still making much of it bear on his selected subject and at the time of examination by the conjoint board, he may be asked to defend the propositions set forth in his thesis. The postgraduate department of several universities will also make some such arrangement. If he enters upon the study of medicine in his 19th year, he may be ready to face life and its problems as an accredited ophthalmologist by the time he is 27 years of age, and that is early enough. This is the direction in which the future of postgraduate ophthalmic teaching in America is trending. Of course, there are those who, if any new step is proposed, always protest that the universe is about to clash down about our heads. But this has been so through all the ages, and if the pullbacks are to be heeded there will be no progress towards those high standards which have removed themselves from the realm of the ideal and have become essential.

1212 Spruce Street.

"Necklace" Lupus Vulgaris.

The tendency of lupus vulgaris to attack parts of the body exposed to the air and light, and not protected by clothing, was well emphasized in an interesting case reported by Dr. Carlo Vignolo-Lutate (*Tech. Supplem. to Urol. and Cutan. Rev.*, October, 1914), with an illustration appended. A young woman, twenty-eight years of age, seamstress, suffered from a dermatosis of

the right cheek, of six years' duration. The eruption of nodular type extended slowly all over the cheek, and in three years involved the entire side of the face. The left side remained unaffected.

The patient had a habit of wearing dresses open at the neck, and of wearing around her neck a broad ribbon made either of silk or ribbon.

During the past three years the patient had noticed an eruption on the neck and chest, similar to that on the face. The area affected corresponds exactly to surface of the neck and chest, not covered by clothing, and forms a striking figure of necklace in the shape of a triangular medallion descending upon the breast. The whole stretch of the skin corresponding to the width of the silk or velvet band remained unaffected.

The Detoxication of Tobacco.

Innumerable attempts have been made, says the *Scientific American*, to protect smokers from the harmful effects of nicotine. So far, however, this object has not been achieved without at the same time depriving the tobacco of its aroma and taste. Recently Ambialet, a French physician, read a paper before the Medical Society of the Department of the Rhône on one of these attempts. His plan is to counteract the defects by the use of other remedies, and it deserves publication, particularly because of its simplicity. Dr. Ambialet has found that if the ordinary coltsfoot or butterbur, which is very common on the countryside, is mixed with tobacco the harmful effects of the latter are completely eliminated. He has himself smoked daily some forty cigarettes made of this mixture, without feeling the slightest effect from the nicotine. At any rate the remedy may be worth a trial, coltsfoot leaves being perfectly harmless and cheap.

Dr. Ambialet claims that tobacco mixed with coltsfoot leaves retains its full aroma and taste, the only perceptible change, if any, being an additional flavor like that of Turkish tobacco. This added flavor should render the mixture very acceptable to most smokers.



THE RARITY OF HOSPITAL INFECTION IN TUBERCULOSIS.

BY

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The infectiousness of tuberculosis, which has been suspected by the ancients, and proved conclusively by Koch's discovery of the tubercle bacillus and the animal experimentation of recent years, has of late been shown to be even more common, more intense, and much easier of accomplishment than has heretofore been appreciated. The prevalent opinion that only "open" cases of phthisis are dangerous because they expectorate sputum reeking with tubercle bacilli which, when dried and pulverized, may be inhaled with dust by unaffected persons and thus cause infection, has been shown to be inadequate to explain all infection observed among humans and animals.

Römer¹ and other active workers in the field of research along these lines, suggest that latent tuberculosis, which is undoubtedly very prevalent even more so than "open" phthisis, can disseminate the disease in a manner with which we are as yet unacquainted. That this is not a mere hypothe-

sis is obvious when we consider certain observations of veterinarians to the effect that the introduction of a cow which reacts to tuberculin into a stable with cattle known to be free from tuberculosis, often brings about infection of the cattle so that ultimately they all become "reactors," although it cannot be proved that the cow which disseminated the bacilli had any physical signs of the disease. In a recent paper on bovine tuberculosis by Harlow Brooks² shows that "reactors" i. e. animals which are perhaps not actively or obviously tuberculous and yet which simply gave the reaction, when housed and fed with perfectly healthy non-reactors, the non-infected herd sooner or later become widely diseased.

Similar observations have been made among human beings. Alfred F. Hess³ reports that in an infant asylum in New York City in which all the children were subjected to the cutaneous tuberculin test as a routine measure on admission and every six months thereafter, a dissemination of tuberculosis has taken place similar to the one just mentioned among cattle. For a long time no instance has been observed in which a non-reacting infant on admission should later give a positive reaction as long as it

¹ P. Römer, *Kritisches und Antikritisches zue Lehre von der Phthisiogenese, Beitr. z. Klinik d. Tuberkulose*, 1912, XXII, 301.

² Harlow Brooks, *Effects of Heredity in Bovine Tuberculosis*, *Amer. Journ. Med. Sciences*, 1914, CXLVIII, 718.

³ A. F. Hess, *Report of a Group of Infants Infected by a Tuberculous Attendant*, *Journ. Amer. Med. Assn.*, 1913, LX, 1617.

remained in the asylum. In other words, no case of infection with tuberculosis has been observed among the infants in that institution. But a new nurse who, as was learned subsequently, had been suffering from tuberculosis and was treated in a sanatorium for the disease, was placed in charge of one of the wards where she remained for six weeks when, upon the discovery of her condition, she was discharged. But testing again the children who have been under her care it was discovered that they were all infected with tuberculosis.

Hess' experience is not unique. Hamburger⁴ reports the case of a child which remained only one-half hour with a consumptive in one room, and several weeks later it developed a fatal tuberculosis. He emphasizes that his experience has taught him that among infants and children intimate contact with tuberculosis is not absolutely necessary in order to accomplish infection. The mere presence of a tuberculous individual, even one with a so-called "closed" lesion may infect an infant.

Similar observations have been made among primitive peoples who have not been exposed to tuberculosis. As soon as they meet with civilized men, the disease is introduced among them. I⁵ have elsewhere shown that no intimate contact is necessary to transmit the disease among persons who have not met with tuberculosis before. This is the case with infants and children in civilized peoples, as well as with primitive peoples who have lived isolated from tuberculous peoples.

The ease with which tuberculosis is transmitted would lead us to expect that the

personnel of hospitals and sanatoria for consumptives would actually be decimated by this disease, considering that they are always in tubercle laden surroundings. Especially is this true of physicians, particularly laryngologists, and nurses. In fact, in Cornet's book on tuberculosis many instances are cited tending to show that this class of people are more liable to this disease than are others. Moreover, we often meet with physicians and nurses who draw the line on tuberculosis wards, and many philanthropists who endow sanatoria are afraid to visit them.

Some experiences of my own have led me to the conviction that adults associating with consumptives are no more liable to develop phthisis or die from the disease than are others of the same social and economic status. As physician to the United Hebrew Charities in New York City I have not met with a case in which one of the visitors of the society should become tuberculous in spite of the fact that they all visited the homes of poor and dependent consumptives who are not known particularly for the special care they exercise in direction of rendering their sputum innocuous. This fact struck me as rather peculiar and I began to investigate further and found that all available evidence tends to show that physicians, nurses and attendants in hospitals for consumptives are no more liable to tuberculosis than are other hospital workers who only rarely come in contact with tuberculous persons.

Some years ago Saugman⁶ collected some valuable statistics as regards infection of medical men engaged in sanatorium work. He found that some medical men wore

⁴F. Hamburger, Ueber tuberkulose Infektion und Reinfektion, *Medizinische Klinik*, 1915, XI, 34.

⁵M. Fishberg, Tuberculization and Immunization, *New York Medical Journal*, 1914, Sept. 12 and 19.

⁶C. Saugman, Zur Frage der Bedeutung der Tropfeninfektion für die Verbreitung der Tuberkulose, *Zeitschrift für Tuberkulose*, 1905, VI, 125; X, 1907, 224.

masks when examining their patients, or took other precautions during throat and lung examination of their patients with a view of preventing infection. He applied to 122 institutions and received answers from 65 sanatoriums in Germany, France, Austria, Hungary, Switzerland, Norway, Sweden, Holland and Finland. In his statistics, Saugman included only doctors who had resided in the sanatorium and treated patients for at least three months and excluded those who were exclusively engaged in bacteriology. He also excluded from his figures any doctor who had been tuberculous before entering the sanatorium. Thus, out of 289 from whom he could obtain information 107 had been previously tuberculous, while 182 regarded themselves as healthy.

Of the 107 old cases of tuberculosis one died of cancer of the sternum, 16 died of tuberculosis, 9 still showed signs of tuberculosis and 73 were healthy at the time of the investigation. The average period of duty of these doctors in an institution was three and a half years, and the average period under observation till death or up to 1902, the date of the first report, was six and a half years. Among these old cases of tuberculosis was one in which fresh symptoms appeared while in the sanatorium, which were found to be due to the presence of the Timothy bacillus, not of the tubercle bacillus. There was one instance of fresh infection in an assistant house physician who had labored nine to ten hours a day for two and a quarter months among very bad cases.

Of the 174 healthy doctors who had spent an average of three years in a sanatorium and whose after history was traced for three and a half years, 2 or 3 were attacked with phthisis, but quite recovered

and not one died of tuberculosis; 5 died of other diseases and 166 remained quite healthy.

Saugman also gives statistics of 66 throat specialists from 8 clinics from which he had obtained facts. One, previously tuberculous, is after 17 years of great activity in laryngeal practice, in excellent health. The rest have been for a period of four years engaged in laryngeal work, and have never suffered from tuberculosis.

The result of these statistics showed that of 174 physicians in sanatoria, two or at most three, and of 64 laryngologists none became sick with phthisis in spite of their exposure to infection. He concludes that tuberculosis is extremely rare among those who are engaged among consumptives; physicians and laryngologists who have been healthy before entering upon their duties remain so. "It is not dangerous for healthy adults to be coughed at by patients suffering from pulmonary or laryngeal tuberculosis," concludes Saugman.

Saugman is not the only one who investigated this problem and arrived at this conclusion. Aufrecht⁷ found that in the hospital at Magdeburg-Altstadt there were admitted between 1880 and 1897 34,500 patients for internal medical diseases; of these 3,828 were consumptives. During that period 263 nurses, orderlies and attendants were employed. All came into intimate contact with the consumptive patients, yet it is remarkable that not one became phthisical. Brunon⁸ investigated the problem in the hospitals in Rouen, France, and found the nurses and attendants who come in close contact with consumptive patients die on

⁷ Aufrecht, Ueber Verhütung und Heilung der chronischen Lungentuberkulose, *Münchener medizinische Wochenschrift*, 1908, XLV, 155.

⁸ R. Brunon, *La Tuberculose Pulmonaire*, Paris, 1913, p. 59.

the average less often from this disease than the general population of that city. This he found by a study of the records for thirty years.

That it is not only the sanitary precautions that have been taken within the last twenty years in sanatoria which prevent the evolution of phthisis in the hospital personnel is evident from the just cited fact brought out by Brunon, and also from statistics carefully collected by C. Theodore Williams⁹ and given in two papers on the subject. In his first paper he gives statistics of the Brompton Hospital for consumption, at that time the largest hospital in the world for the treatment of phthisis. He shows that when opened in 1846, and up to 1877 the wards were very imperfectly ventilated, and no attempts had been made at disinfection of sputum unless the odor was unpleasant. These defects must have led to a large accumulation in the wards of the products of respiration and of tubercle bacilli, and extension of the disease to non-consumptive cases and nurses would appear inevitable. But as Williams shows "nothing of the sort occurred. All the four medical officers were alive and healthy; of the 150 clinical assistants who served during that period, 8 became consumptive at some time or another and 5 died. It is quite possible that some of these 8 cases of consumption among 150 house physicians were due to hospital infection, but this is a small proportion and could be expected among any 150 individuals." Moreover, Williams had no data whether or not some of these eight physicians were sick with the disease before entering upon the service.

In a second paper Williams¹⁰ gives statis-

tics of the Brompton Hospital medical staff, resident, since 1882. The number of beds had been increased from 240 to 458. Of the 11 resident medical officers whose period of office has varied from one to five years, none had become sick nor died from tuberculosis. Of the fourteen assistant medical officers none had contracted the disease, but one, from a post mortem wound, but he recovered. There were 181 house physicians and clinical assistants since 1882. Of these 176 were traced by Williams in 1909. None of them showed any signs or symptoms of tuberculosis during residence. Two died some months after leaving the hospital; one became consumptive 14 years after residence, and one four years after residence. Among the resident medical officers there were no cases of consumption; among the assistant resident medical officers one (from inoculation), and among the house physicians none were affected during residence. Two subsequently died of acute phthisis, when holding resident appointments in hospitals where cases of consumption are admitted, and one was attacked with consumption 14 years after he left the hospital and recovered. These statistics are even more favorable than those previously reported.

It thus appears that the sanitary precautions at present taken in hospitals for consumptives are not altogether responsible for the rarity of phthisis among physicians, nurses and orderlies in these institutions. At the Brompton Hospital no precautions were taken before 1882, the sputum was not properly disposed of yet the disease was not transmitted to the medical staff; in fact they appear to have suffered in lesser numbers than would be expected considering the frequency of the disease among the general population, the vast majority of which is not exposed as much as physicians in tuberculous institutions. Even now, very

⁹ C. Theodore Williams, *Infection in Consumption*, *British Medical Journal*, 1882, p. 618.

¹⁰ C. T. Williams, *Infection of Consumption*, *British Medical Journal*, August 21, 1909, p. 433.

few laryngologists treating tuberculous patients can say that they are not often coughed at by their patients. Yet tuberculosis is not more frequent among them than among others.

Other proofs are not lacking. It is well known that quite a large proportion of the cases admitted to sanatoria are proven by careful observation to be free from consumption. Some of these non-tuberculous patients remain in the institution for only a few weeks but not a few are detained for several months before a positive diagnosis excluding phthisis is made. Still there is no case on record showing conclusively that one of these non-tuberculous patients had been infected with tuberculosis while in the institution. No admitting physician to a sanatorium hesitates to send a doubtful case to his institution for observation, as would be the case with smallpox, measles, etc. Freymuth¹¹ has made a study of this problem and arrives at the conclusion that no patient has ever been infected in a sanatorium. In a large sanatorium in which sixty per cent. of the patients suffered from "closed" tuberculosis, and 45 per cent. were incipient cases, presumably many of which were inactive cases, no case of exogenic infection i. e., with tubercle bacilli from another patient, has been observed by Freymuth. It is also the experience of hospital physicians that in spite of the close contact of the patients, and droplet infection during speaking, coughing, etc., can hardly be avoided, no case has ever been observed in which a patient suffering from a mild form of the disease should become infected by his neighbor suffering from a severe type of the disease. In pairing patients, two in a room,

this problem is never considered, but only the social condition of the patients, the degree of intelligence, nationality, etc., are considered.

This paradox, that tuberculosis is a highly infectious disease, yet physicians, nurses and orderlies in hospitals for consumptives are rarely, if ever infected, has been explained recently to the apparent satisfaction of those who have given thought to the problem. Formerly this rarity of hospital infection was used by some as a strong argument against the transmissibility of the disease. But we now know that there is hardly any other pathological process which can be more easily transmitted from the sick to the healthy.

Recent experimental research has shown that an animal infected with tubercle bacilli cannot be reinfected with the same virus, nor can superinfection with different strains of tubercle bacilli be accomplished. It has also been found while making autopsies that at the age of twenty over ninety per cent. of human beings, in some tissues, especially the lungs, show microscopic changes which indicate that at some time during their life they have been infected with tubercle bacilli. The various tuberculin tests have also shown that over ninety per cent. of adult human beings give positive reactions. It has also been found that at birth tuberculous changes are practically never found and the tuberculin test is always negative. During the first year of life some become infected; during the second a large number are infected, and so the proportion infected with tubercle bacilli keeps on increasing so that at the age of fifteen about ninety per cent. have been infected. In another paper the author¹² has

¹¹ Freymuth, Ueber Tuberkulose Reinfektion mit besonderer Berücksichtigung der Heilstätten, *Beitr. zur Klinik der Tuberkulose*, 1911, XX, 231.

¹² M. Fishberg, A Study of the Child in the Tuberculous Milieu, *Archives of Pediatrics*, Febr. and March, 1914; The Cutaneous Tuberculin Test in Children of Non-tuberculous Parentage, *Archives of Pediatrics*, January, 1915.

collected data showing this to be a fact and reported observations among the tenement population of New York City which confirm these findings.

It thus appears that adults living in modern large cities may be presumed to have been infected with tuberculosis before reaching adolescence. Whether or not they will develop phthisis is another matter and will not be discussed here. But after having once been infected, they are immunized against reinfection with the same virus.

The hospital staff in institutions for the treatment of tuberculosis are adults who like all others have been infected during childhood. They are thus immune to reinfection and superinfection with tubercle bacilli, just like those who have passed through an attack of measles, scarlet fever, typhoid, syphilis, etc., cannot be reinfected with the virus of these diseases.

57 East 93rd Street.

THE MECHANICAL TREATMENT OF DEFORMING ARTHRITIS.

BY

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As the joints have purely mechanical functions, all abnormalities which affect them, do so in a purely mechanical way. Thus the external manifestations and the functional impairment in joint disease depend, not upon the character or the cause of the pathological process, but entirely upon the location and the extent of the

mechanical injury which has resulted therefrom. It therefore matters very little what has caused, or just exactly how, the morbid process has lead to the softening, rarefaction and consequent deformation of the articulating bones, as far as the disturbance of function is concerned; this depends entirely upon the location and extent of the deformity and its influence upon the congruity of the joint surfaces. Similarly it makes little difference how or why the cartilage becomes fibrillated or lost, the interference with joint motion will depend entirely upon the changed mechanical conditions. So too, thickening of the capsule, proliferative changes in the synovial membrane, excess of synovia, etc., whatever their cause, all manifest themselves by their interference with the normal joint mechanism.

Hence important as they are, it is unnecessary to discuss etiology and classification, when mechanical treatment of joint diseases is under consideration. The more so as it will be found that the joint structures are affected in practically the same way, no matter what the cause or the character of the pathological condition. Thus if we leave out of consideration certain rare forms of tumor formation, pathological conditions, as they involve the joints, vary little in character; indeed the changes are so uniform, that it is always difficult, and often impossible to differentiate the various forms of joint disease from one another from the post mortem findings.

On the other hand, though, the etiology and the character of the pathological process itself may be disregarded; an exact knowledge of the changes in the joint structures, which lead directly or indirectly to interference with normal joint mechanics, is absolutely necessary if the proper methods for treating the joint diseases can be appre-

ciated and applied. For this reason, at least, a brief exposition of the more important pathological changes as they relate to joint mechanics must precede the discussion of the mechanical treatment.

I formerly believed that it was possible to differentiate between the various forms of joint abnormality as they affect the different joint structures. As my experience in joint pathology, particularly in experimental joint pathology, became more extensive, I found that this division, though practical in the final stages from a clinical point of view, is more or less arbitrary. There are no joint diseases (trauma not included) in which all the joint structures are not involved at some stage. So, for instance, it has been found that in the cases of experimental arthritis, in which the only clinical manifestation is joint effusion, there are always bacteria and morbid changes in the epiphyseal ends of the bones. And though it is true that in many cases the bone changes eventually disappear, leaving only more or less permanent changes in the soft structures, or, on the contrary, the inflammatory or other changes in the soft parts disappear, leaving only bone deformity, etc., all these structures are involved during the active stage of any articular disease. For the present purpose, therefore, I shall divide the consideration of the pathology into two parts, (1) the active stage of the disease, (2) the quiescent or terminal stage.

(1) Changes which take place in all forms of articular disease during the active stage.

From my clinical, pathological and experimental experience I am convinced that there is no pathological condition involving the joints, in which the bones are not primarily involved. Moreover, though the intensity of the disease may vary, the changes in the epiphyseal ends of the bones are always

fundamentally the same. The immediate reaction to trauma and all morbid influences which involve the bones and joints consists of vascular congestion and a proliferation of the marrow cells. And, as the existence of the bone substances—leaving aside static influences—seems to depend upon the intramedullary pressure, these vascular and proliferative phenomena are soon followed by bone absorption or rarefaction. Hence the so-called inflammatory atrophy which appears so early in joint inflammations and joint and bone trauma.

The intensity of the marrow proliferation and the resultant bone atrophy depend, not upon the character, but upon the intensity of the pathological process. In a large number of the cases of the non-suppurative infective joint diseases the marrow cell proliferation is limited in extent and of short duration. In such cases there are no clinical manifestations of bone rarefaction. So in the cases usually designated acute articular rheumatism, the bone changes, though present, are so limited in extent and of such short duration, that they cannot be demonstrated clinically; and thus the clinical signs in these cases consist of nothing more than a more or less definite and usually evanescent joint effusion.

In the more severe cases, the absorptive phenomena are more extensive, and when they reach a certain degree of intensity, they can be demonstrated in the smaller joints by radiography. When the condition is marked, the bone structure loses its power of resisting the normal static and mechanical influences, and the articular surfaces become subject to deformation. Other things being equal the extent of the deformity will depend upon the location and intensity of the bone rarefaction, the character of the articulation, and the mechanical conditions to

which it is subservient. It is evident that the joints of the lower extremity which are likely to be subjected to weight bearing under these abnormal circumstances, are more apt to be severely deformed than the joints of the upper extremity; and joints retained at rest during this period of the disease are much less likely to become deformed than those subjected to manipulation, etc.

In the mild and moderately severe forms of joint disease, the proliferative and subsequent absorptive conditions have a strong tendency to terminate in resolution. And, providing the joints have received no damage from manipulation or otherwise during the period of rarefaction, the structure of the bones is sooner or later completely restored. In the severe forms, the marrow cell proliferation is extreme, a large part of the epiphysis becomes rarefied, and the bone substance is never regenerated. In such cases the proliferated marrow cells either degenerate and the large marrow space becomes filled with fluid or semi-fluid content; or the marrow cells become replaced by connective tissue which more or less completely replaces the bone structure of the epiphysis.

In the milder forms of joint disease the cartilage remains unaffected. In the severer forms the cartilage becomes involved by an extension of the morbid process from the bone. The proliferating marrow cells approach and finally invade this structure which becomes absorbed exactly in the same way as the bone. When the cartilage is not directly invaded, it may degenerate as a result of the degeneration of the underlying epiphyseal bone and consequent loss of its source of nutrition. In this connection it is important to remember that the cartilage has no power of regeneration; when, there-

fore, it is lost because it has been partly or wholly absorbed or degenerated, the loss is permanent.

With the partial or complete loss of the joint cartilage, the joint interior necessarily becomes invaded by the morbid process. Thus the capsule and the other soft structures may become involved secondarily. In the majority of instances, however, the disease, when serious enough to cause chondral absorption or degeneration, has already involved the capsule before this event has taken place. The epiphyseal disease is not only subchondral, but also subperiosteal; and the capsular invasion originates at the point where the capsule and periosteum become blended, i. e., at the site of capsular insertion. As a matter of fact, the capsular invasion in this wise is the usual mode of progression, and thus there are many cases in which the capsule becomes involved, whilst the cartilage remains unaffected.

Whatever the mode of invasion, the morbid condition of the soft structures is practically always reactive. Indeed the capsule will show an inflammatory reaction (swelling and joint effusion) even when it has not been actually involved, whenever there are inflammatory conditions near the joint, or whenever the joint must operate under abnormal mechanical conditions. The active capsular changes, whatever the cause, the character of the morbid disease or the mechanical disturbance, are congestion, connective tissue proliferation and contraction. Rarely, following enormous joint effusion, the capsule atrophies more or less completely and there results complete joint relaxation, "flail joint" with subsequent subluxation or complete luxation. During the early stages of activity when there is congestion, there is always effusion, which may be transitory, disappearing with the capsular

changes, or chronic continuing long after these have subsided.

Hence the changes which interfere with the normal joint mechanism during the active stage of all forms of joint disease, are first, transitory, chronic or permanent rarefaction of the articular ends of the bones with or without subsequent deformation. Second, irritative phenomena of the soft structures. These in the mildest cases consist of congestion of the capsule, and slight joint effusion in the less moderate conditions, of joint effusion, capsular thickening and proliferation of the synovial fringes, etc.; and in the severe forms marked proliferative changes and subsequent condensation of the connective tissue so formed. When these conditions come on suddenly and proceed rapidly we speak of acute arthritis; when they come on insidiously and proceed slowly we speak of chronic arthritis.

In a great many cases these acute and chronic conditions are followed by complete restoration. In others, the active process sooner or later becomes quiescent, but the joint structures have undergone such changes that complete restoration is impossible, and the interference with the normal joint mechanics becomes permanent. Thus we have what is here designated "The Terminal Stage of Joint Disease."

It is of course impossible to describe in anything like detail all the changes which may follow joint disease. As has been said, these will depend upon the intensity of the morbid process and the mechanical condition present during the active stages of disease.

Should the joints be roughly handled or subjected to weight bearing during the stage of rarefaction, deformation is certain to result. On the other hand, when the rarefaction is marked, extensive deformation will

result under any circumstances, either during or after the active process has subsided. When the cartilage has been involved in the process, there is little likelihood that the joint will naturally resume its normal functions. Though partial ankylosis may be the result of capsular proliferation and cicatricial contraction, these conditions are, as a rule, caused by the partial or complete loss of joint cartilage. When the cartilage is only partially lost, the loss of motion is due not only to the defect itself, but also to the fact that the unchanged cartilage subsequently becomes covered with connective tissue, which enters the joint interior through the defect, and subsequently completely covers the joint surface. In those forms of disease in which both bones of the articulation are coincidentally involved, these become united by connective tissue in the final stages of the disease, constituting what is known as fibrous ankylosis; this fibrous union may subsequently undergo ossification and we then have true bony ankylosis.

These very briefly are the conditions to be considered in the discussion of the treatment of articular disease. In the acute stage we must consider the manner in which the joint structures are affected by morbid conditions, how these morbid conditions lead to impairment of joint function; in the terminal stages, we must estimate exactly what tissues are lost or impaired permanently, their relation to the disturbance of joint functions and the methods by which we may partially or wholly overcome the functional disturbance.

It is out of the question to describe all of the details in a paper of this length. Enough has been said, however, to indicate the principles upon which the treatment of joint disease should be based. Without the details

one cannot, of course, describe all the necessary minutia of treatment. Nor is this necessary nor advisable under existing conditions. To judge from my own experience there is no branch of medicine in which adequate treatment lies so deeply buried in a mass of empirical details, and none in which it is so important that the surgeon should be cognizant of the underlying principles as is the treatment of joint disease.

Treatment of the Active Stage.—From what has been said it is evident that during the active stage of all joint disease we are dealing with conditions which are of themselves of an active inflammatory nature, or which, by their disturbance of the joint mechanics lead to secondary inflammation. Though the bone symptoms may be mild, capsular irritation is always present, even in the mildest cases. In all the severe forms, there are not only the capsular changes to be considered, but also the inflammatory and absorptive phenomena in the bone. The *sine qua non* in the treatment of all inflammatory conditions is rest. As regards the joints, this principle is, if anything, even more important than in disease elsewhere. The capsule is always the site of irritative phenomena, and all forms of mechanical insults increase this inflammatory reaction. Thus tissue proliferation and joint effusion are increased and the liability to permanent damage is greatly augmented irrespective of the character of the pathological condition. When bone rarefaction is at all marked, it is perfectly evident that any, even slight mechanical (static or active) influences are likely to lead to deformation and as a result permanent joint disability.

It is clear, then, that the usual methods of treatment prescribed for patients with active joint disease is calculated to injure rather than benefit the affected organs.

Massage, passive and active motion, and other forms of mechanical treatment which enjoy such widespread popularity in the treatment of these conditions are absolutely contraindicated. It is true that in some instances the patients recovered in spite of such treatment, but my experience has lead me to believe that in the majority of cases the condition is thereby prolonged; and in not a small number of cases, the individual is more injured by the treatment than by the disease. Even hot air, though it relieves pain temporarily in the majority of cases, is likely to lead to joint irritation. It cannot, therefore, be too emphatically stated, that active mechanical treatment should be avoided during the active stages of joint disease. This is just as true of chronic as of acute conditions.

During this period, the affected joints should, as nearly as possible, be put at rest. It makes little difference what form of apparatus is used, so long as it accomplishes this purpose. Amongst orthopedic surgeons the favorite method of procuring rest is the application of plaster of Paris bandage; but any form of splinting which assures rest, will not only tend to relieve pain, but will promote any tendency which naturally exists, towards restoration of function.

There are a number of details to be observed in this connection which can only be broadly dealt with at the present time. Joints have certain positions of relaxation which the patients voluntarily or involuntarily assume, when they become the seat of disease. In a great many instances such positions are to be scrupulously encouraged. Certain of them cannot be maintained for any length of time (so for instance the abducted partially flexed position of the hip) without external mechanical assistance. In the latter instance, this posi-

tion too, is mechanically, the most advantageous, should the disease result in ankylosis. In other joints, however, as in the knee, the position of partial flexion is the position of relaxation and the one usually assumed by the patient when this joint is affected; but in this case, this position is not the most advantageous position mechanically, should permanent ankylosis be the final result. Hence in this instance the joint should be immobilized in the extended position, whenever this can be done (which it usually can in the early stages) without the use of force.

However, whatever may be the case in the individual instances, more or less complete immobilization in the most advantageous position both from the point of view of relaxation and the future mechanical conditions is always the prime indication during the active stages of disease.

In this regard a number of facts and fallacies must receive consideration here. In the first place it must be emphasized that permanent joint ankylosis is never the result of immobilization. Normal joints may be immobilized for many months and perfect motion will return immediately or soon after the removal of the apparatus. When ankylosis occurs in case of joint disease, this is always the result of the disease, and such a condition would have occurred, whether the joint was immobilized by external mechanical means or not.

On the other hand, the position of the limb should ankylosis occur, definitely depends upon the position assumed during the illness, and it will depend more or less entirely upon the knowledge and skill of the physician or surgeon whether or not this will be advantageous or disadvantageous mechanically, when the disease has subsided.

It should also be remembered that the muscles and soft structures around the joint, influence the permanent position, when the joint has been naturally or artificially held in a certain position for a more or less considerable length of time. The length of muscles is adapted to the greatest stretch they must cover in any position of the skeletal parts to which they are connected, under the prevailing normal or abnormal conditions. When the two skeletal parts become for some reason, more closely approximated and remain so, for any length of time, the distance between the origin and insertion points of the muscle becomes diminished, and the muscle adapts itself to this distance by shortening of its fibres. That is, the muscle becomes shortened and we are dealing with what is usually improperly called, joint contracture. So for instance, in a case of knee disease, if the joint is held, naturally or otherwise, in the flexed position, continuously, for some time, the flexors of the knee become shortened, and remain so, even should the joint disease terminate in perfect resolution.

Hence, the position of immobilization should be chosen not only in accordance with the mechanical requirements of permanent ankylosis, but also with due regard to the retention of the length of the muscles necessary for normal function, should perfect recovery from the joint disease result. Should the latter consideration be neglected, the muscle shortening which occurs in the course of long continued joint disease, is of itself a disabling deformity, often necessitating operative measures for its correction. As regards no joint is this neglect so common, and in none are its evil results so manifest, as in the traumatic and pathologic conditions of the shoulder. Here it is the common practice to purposely retain, or to

allow the patient to retain the arm closely approximated to the body. The result is that even when the morbid condition is recovered from, months of more or less painful treatment is required to restore the power of abduction; treatment which would not have been necessary, had the proper precautions been observed during the early stages of the malady.

The Treatment During the Terminal Stage.—Under normal conditions, the joints carry on certain mechanical processes accurately and without discomfort to the individual. When for some reason, the integrity of the joint becomes impaired, both or either the accuracy or the comfort with which these functions are performed is affected.

When the joint is only mildly inflamed and there is simply increased intra-articular pressure, the accuracy, or the extent of the motion is not necessarily impaired; but it becomes painful; motion is then voluntarily or reflexly inhibited. When, however, any part of the joint structure becomes organically changed, the motion will be partly or wholly inhibited irrespective of the subjectivity. That is, the joint functions cannot be properly performed even should there be no pain.

Thus during the acute stages of the disease and even during the stage of resolution, the patient voluntarily or involuntarily attempts to keep the affected parts at rest unless advised or forced to do otherwise. When the disease has run its course and terminated in resolution, he will nearly always gradually resume the use of the affected parts of his own accord.

On the other hand, when the disease has lead to organic changes, the joint function is not completely inhibited, functions must be performed under abnormal mechanical

conditions. Under these circumstances, there appear the symptoms of organic joint irritation. Thus when the joint surfaces are no longer congruent or the capsule becomes abnormally compressed or stretched, the joint structures become the seat of reactive inflammation exactly as they would, were they subjected to trauma under normal conditions.

Thus, any attempt, voluntary or forcible, to restore complete motion, when the parts are so altered, that the mechanical relation of the joint structures is impaired, leads to an inflammatory reaction, even when the original disease has entirely disappeared.

It is, therefore self-evident, that any attempt to forcibly restore motion, either by mechanical or instrumental manipulation, is harmful whenever there are actual organic changes in the joint structure, whether these are in the capsule, the cartilage or in the bone. Though I am willing to admit that timid patients who are recovering or have recovered from some joint disease without organic changes, are sometimes helped by manipulation, I am absolutely convinced that all the individuals who have definite organic conditions, are seriously injured by these maneuvers, even when they are practiced by skillful surgeons. The more forceful and the more often the manipulative procedures are resorted to, the more severe and the more lasting is the inflammatory reaction, and the sooner is the surgeon compelled to desist because of the suffering of the patient or the firmness of the ankylosis.

When the general and local symptoms of the pathological condition have subsided the joints involved should be carefully examined, and the exact anatomical condition should be determined. The radiograph will more or less definitely show the bone changes but it will not show the more

moderate capsule abnormalities. If, in a given case, the articular ends of the bones are not markedly rarefied and gentle passive motion does not give rise to joint spasm, it may be assumed that the joint is not seriously damaged. In such cases the only mechanical or other treatment required is gradually increased passive motion and gradual resumption of voluntary motion. This may, in some cases, give rise to a certain amount of pain; but this is negligible and the patient may be encouraged to persevere, providing there is no recurrence of joint swelling. Should this occur, the joints must again be put at rest and the procedure must be repeated at some time later.

In those cases in which the limbs have been allowed to assume faulty attitudes it not infrequently happens, that the deformity which results therefrom, persists even after the joints have been otherwise completely restored. Under these circumstances joint motion is limited in accordance with the muscle shortening; and the joint motions, passive and voluntary, are perfectly free in all other directions. So for instance, if the adductors of the hip are shortened, all hip motions are free except abduction.

No force should be used to correct the muscle shortening, until long after the disease has completely disappeared. It should be remembered that the bones do not regain their normal consistency until long after the disease has passed, and forcible stretching of the muscle (and it often requires considerable force to stretch a muscle shortened in this manner) may lead to articular damage, not always easily corrected afterward. Early or late, it certainly is much less dangerous and much more likely to lead to the expected result (when skillfully done, it is as a matter of fact not dangerous in any way) to cut the tendon of the affected

muscle than it is to stretch it. There are a great many more such cases than the general practitioner is aware of; and so, not infrequently what seems a very crippling condition, is often readily relieved.

When it comes to estimating the exact bone alteration during or after joint disease, the radiograph, when properly interpreted is the only sure guide. It must always be remembered, however, that the radiograph is a shadow picture; and therefore depending upon the situation of the tube, the distance of the plate and the position of the limb, there is distortion, which must always be taken into account when the plate is interpreted. The degree of rarefaction and the alteration in the bone structure too, must always be interpreted with due regard to the character of the tube, the length of exposure, and the method of development. When these limitations are considered, the radiograph is not only a useful, but the only sure guide to the character and extent of the joint changes.

In a certain number of cases, following the subsidence of the active condition, we find the bones show no abnormality, but the joint is held in an abnormal position, not only by muscle shortening, but by shortening and cicatricial contraction of the soft structures. The treatment usually recommended for the patients with this condition is almost diabolical. Massage, forcible motion, either by manipulation or ingeniously constructed machines; and when the patient refuses to bear these any longer, forcible motion under an anesthetic are the present methods of treatment. All these procedures, not only cause the patient undue suffering but make the condition more intractable. The soft parts are mechanically irritated, the adhesions not only immediately reunite, but are markedly increased; and thus the

joint becomes more stiff than it was before. Of these procedures, because it does the most harm there is none more to be deprecated, whether it is done to correct deformity or to secure mobility than the forcible correction under anesthesia, the so-called "brisement forcé." Deformity may be corrected by much more adequate procedures, and I do not believe that anyone ever secured motion with its use. On the other hand, I have no doubt that countless hapless individuals have suffered irreparable injury as a result of its application, and the name and the method should be eliminated from the list of surgical procedures.

What then should be the method of treatment in these cases? As only well directed and skillful surgical treatment will be likely to restore mobility, the circumstances in each particular case must be taken into consideration. When one or two joints are involved the question of operating is easily decided. It is, of course, out of the question to operate upon a great many such joints in one individual; and here the first consideration is how many and what joints should be attacked. A patient, for instance, with both knees and hips involved, cannot nor does he expect to have all of them restored. In such cases, I usually recommend one extremity should be placed in good position but allowed to remain stiff whilst the attempt to mobilize should be made upon the other.

In the upper extremities when both are involved, it is self-evident that the right should be mobilized before or to the exclusion of the left. All these considerations, important as they are, cannot be discussed in detail here. Each case must be carefully considered as a definite problem.

The only procedure likely to lead to success in these cases is to open the joint and

remove absolutely all the cicatricial tissue, cut all shortened tendons, so that perfectly free motion without the use of the slightest force is secured at the time of the operation. When the cartilage is covered with a more or less thick layer of cicatricial tissue, this too must be removed so that the joint cleft is free and the joint surfaces glide smoothly over each other. So long as the bone tissue is not exposed within the joint, the original disease having completely disappeared, and the after treatment efficiently carried out, I have not found it necessary to interpose anything between the joint surfaces.

On the other hand, should the bone be exposed, particularly when the adjacent joint surface is involved, or should there have been bony ankylosis, the interposition of some tissue, either fascia or fascia and fat is necessary. When the joint surfaces have been made congruent and adapted to the functions they are to carry out, and when the rules laid down by Ollier, many years ago, are properly observed, it matters little whether the flap is free or pedunculated.

The technic of arthroplasty and other surgical procedures which are required cannot be dealt with here, in detail; but the general consideration upon which these procedures must be based must be emphasized. The more so, as these considerations are rarely fully appreciated or definitely applied by the average operating surgeon.

The first and foremost consideration should be the proper selection of the cases. Patients who have a great many joints involved, who have been sick for years, whose muscles are atrophic, and whose general condition is markedly impaired are not favorable subjects for operation. Even should the actual operative measures resorted to, be successful, these patients are not likely to make use of the restored joint.

When the local condition has been very severe, and there is marked atrophy of the bone and other joint structures, no operative measures can restore function. Here theoretical considerations, though important, must give way to practical considerations. The question is not, how can we restore motion; this can nearly always be done by a skillful operation; but can we give the patient a joint in which the motion is well directed, and will it be of practical use to the patient. Indeed in some cases, a solid ankylosis is of much more practical benefit to the patient than motion of whatever kind, surely so, when the motion is not adapted to the function it must serve.

The individuality of the patient too is of great importance. As the after treatment requires not only long continued and persistent effort on the part of the patient, but is also likely to be attended by a considerable amount of pain and discomfort, only those who are likely to be resolute enough to carry this through should be selected for operation.

Not only must the patient be willing and ready to submit to long continued, and more or less painful after treatment, but the surgeon who cares for him must have the requisite knowledge, and the facilities for carrying this out. Such patients must be in the hospital for a long time; the atrophic muscles must be stimulated by massage, the extension and passive motion, must be skillfully applied, and augmented by the use of apparatus expertly manipulated. As a matter of fact, the mechanical after treatment is equally as important as skillful operating. The surgeon who endeavors to treat these cases, must have special knowledge; he must have not only a good general surgical training, but he must have in addition, a special and precise knowledge of the

general conditions which lead to joint deformation and disability, the pathogenesis of morbid articular conditions, and the mechanics of normal and abnormal joint mechanism. It must be confessed that, as a general rule these requirements are too frequently, only conspicuous by their absence. No sensible person would permit anyone who is not especially trained and experienced to handle or repair a simple inorganic machine, yet it is the common practice to relegate the treatment of such a delicate and complicated mechanism as the human joints to hospital nurses, masseurs and surgeons, whose knowledge of mechanics, to say nothing of pathology, is totally deficient.

Under these circumstances, the present paper can make no pretensions to anything like a definite exposition of the actual technique of the mechanical treatment of deforming arthritis. Nor is its aim, as might be supposed, from some of the things that have been said, to deprecate the importance or the desirability of mechanical treatment. On the contrary, it is in the hope, that the principles which must underlie such treatment should be more carefully studied, that its indications and contraindications should be appreciated and that operating surgeons be induced to give more careful consideration of the anatomical and mechanical condition that the paper is here published.

Heredity.—Lugaro declares that an infection, an habitual intoxication of the parent or parents, a maternal disease during pregnancy, can determine perversion of development, which though so slight and uniform as to be quite unobservable at birth comes to the surface with the progress of years in the shape of unexpected failures of certain fundamental functions of intelligence, of eccentricity of character and of perversion.

OPERATING ON CARDIAC CASES.

BY

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When it is necessary to operate upon or to deliver a patient with a cardiac deficiency the great symptom-complex to fear is syncope or fainting. Therefore, one cannot go far wrong if he considers, among many things, what he would do to forestall fainting, because if a given patient does not get cerebral anemia, other risks are of subsidiary importance. The heart is a pump within pumps, and the total pumping force of the circulation is cardio-pulmonary-thoracic, and not merely cardiac. The visible effects of the non-cardiac pumps are plainly seen in the brain and its vessels. Neglected as this important point is, space forbids my giving a lecture on physiology, but a few lines will be quoted merely to give the idea clarity. Foster, page 171, says: "Were the heart perfectly motionless, the workings of the respiratory pump alone would tend to keep up the circulation." It cannot back fire because the heart valves open but one way. Again, *ibid*, page 497, "The rhythmic rise and fall of the cerebral mass is synchronous with the respiratory movements." If a man faints what hurries? The heart? May not the man pant for breath with a bradycardiac leisure in his pulse beats? One has but to watch the very next woman who faints and notice which goes to pieces first, the cardiac or the pulmo-thoracic part of the circulation's pumping mechanism. It is a little humiliating to have some old nurse cut the patient's corset strings while one waits, though.

In his dealings with this compound interlocking pump the average surgeon thinks

only of the first cylinder as it were and administers digitalis, etc., as he deems best. But if one is determined to make unusual demands upon a badly damaged heart one thing it will not stand and that is interference with respiration. Furthermore, respiration begins at the nostril. Better no digitalis, a bad heart and a fine free nostril than a weak but undamaged heart and a choked (blocked) intake for the lungs.

It is not necessary to explain that the mouth is not the true intake but a sort of spill way, even if the falling back of the tongue did not add its interference. It is a very pleasant surprise indeed to see for the first time the effect of the instillation of a few drops of adrenalin into the nostril of an anesthetized patient. Facial color and pulse quality usually change from cyanosis (often) to a pink hue and from fluttering to steadiness. This may be readily performed by any skillful anesthetist using dropper or swab. Or the nostrils may be freed with cocaine before the operation and the effect prolonged by an antipyrin solution locally applied.

Surely my position in this matter cannot be disputed, based as it is upon physiology and experience, and so simple to demonstrate.

This brings my little essay to a close with the question, "Why look after the damaged heart, solely, and at the same time neglect its most powerful allies, viz., the lungs, when the latter, mechanically speaking, commence their pumping functions at the tip of the patient's nose?"

It is always interesting and may prove valuable to journey into the realms of pure speculation. Was it not Arago who said that any man who used the word "impossible" lacked prudence? The thoracic part of the aforesaid pumping machinery is so

powerful that it is thought to furnish sufficient force to carry on the circulation, if only the resistance of the lungs were removed, and most systems of artificial respiration make their attack through the thoracic pump, hoping that if that is forced to work the removal of the pulmonary resistant will follow as a consequence of that work. Why not then apply a direct handle to that mechanism instead of the present indirect method of pulling it up through the pectoral muscles and moving the weight of the arms, etc., thus throwing additional and possibly unnecessary strain and fatigue upon the manipulator. Theoretically the sternum might be drilled between the 6th and 7th ribs, a short blunt corkscrew with a large ring handle screwed in and control obtained. Or a stout ligature or wire passed around the sternum, hugging that bone all the way and avoiding the internal mammary, or a wire loop could be made around the 6th rib (right and left) and a bundle carrying handle inserted. Alternate traction and pressure with the surgeons' right and left hands would appear to promise an easier and less laborious method of employing forced respiration than the methods in use and rather adapted to first aid requisites than to operating room service. The suggested resource would in no conceivable way interfere with oxygen administration, or anti-shock procedures, whereas the large gestures of the Sylvester scheme for instance certainly are a nuisance.

As to the drop method or other administration of normal saline; why not employ milk as a solvent instead of water? Whoever has not done so has something to learn. Hemorrhage is to be avoided in bad cardiac conditions and the injection of a quart of salted milk into the rectum, its retention there, and its anti-hemorrhagic effects

elsewhere due to its increasing the fibrin-ferment manifestations are well known but the information can hardly be too widely spread.

WAR BABIES.

BY

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New York City.

The press announcements of 20,000 prospective war babies in England and that Belgian prelates justify measures to prevent war babies of German fatherhood in France and Belgium, have more than a sociological interest to physicians. An increase in the number of illegitimate children is a concomitant of war and it also happens wherever a large body of men, especially soldiers, is quartered and the supply of prostitutes is insufficient to meet the demand. There are no sociological questions more difficult of solution than the cause and control of prostitution and illegitimacy and the care of the illegitimate child and its mother. It is cowardly to ignore the subject on the ground that one cannot touch filth without becoming filthy, it is folly to consider it from the unpractical, idealist's view-point that prostitution and illegitimacy being wrong they *must* be suppressed, that men must repress the sex instinct until they are married, that women *must* insist upon some kind of a marriage formula before submitting to sexual congress. Prostitution, coeval with society, has been condemned by laws since its recognition as a social evil, yet it is perhaps as prevalent today as at any time in history. Repressive laws have lessened the public exhibition of vice but vice has increased in the far more pernicious forms of clandestine

prostitution and mistresses. Illegitimacy has probably decreased through a more widespread knowledge of means to prevent conception and measures to terminate pregnancy. (Bearing upon this, a physician in Edinburgh replied to my question why illegitimacy was more prevalent in Scotland than in any other country in Europe, that abortions were rarely performed in Scotland. The practice of bundling is still in vogue there).

Sanger has shown that there was a distinct relation between prostitution and illegitimacy; in agricultural districts in which there are no prostitutes there are many illegitimate births, towns in which there are a few prostitutes have a smaller proportion of illegitimate births and the proportion is least in cities in which there are many prostitutes. In 1855, Middlesex County in which London is situated had 40 illegitimate births out of 1,000 births while Cumberland County, a pastoral and mountainous district, had 108 in every 1,000 births. These proportions have probably been reduced in recent years. I have no figures but the proportion in New York City at present, as given me by Doctor Guilfooy, the Registrar of Records of the Health Department, is 11.44 per thousand. That this is probably due to the greater knowledge among women of the means to prevent conception and produce abortion may be inferred from the diminishing birth-rate, the small families, and the small number of foundlings. Sanger says, "where there are no prostitutes there are bastards." The moralist preaches absolute continence while our practical government furnishes its soldiers with sanitary kits to prevent venereal disease. Before the present war British troops sent to over sea stations, were accompanied by their sweethearts and mis-

tresses and if the soldiers went on troop ships, the women followed by the next passenger ship, paying a nominal fare for transportation. In France the soldier's pay is only twenty dollars a year and the government encourages the vivandieres who generally sell their favors as well as their wares. In the naval ports and garrison towns certain of the red-light houses are patronized almost exclusively by soldiers and sailors who make up in numbers what they lack in funds. Somewhat similar conditions exist in Germany and Austria. Governments understand what the good people who demand complete suppression of vice, refuse to realize; that the sex instinct cannot be controlled by statute and that sermons will not satisfy the cravings that this instinct arouses. This is not said in extenuation of vice, but as a fact which anyone may observe who is willing to look at the practical side of the problem, the existing condition.

What to do for the prospective mother and what to do with the child are serious problems, but a more serious problem is how to prevent a continuance of this state of affairs.

The number rather than the status of the children is the matter for immediate concern, for while some mothers will want to keep their offspring, nearly all of the girls come from the lower classes and they will be compelled to turn their children over to institutions, to become wards of the municipalities or the nation. In the present temper of the English people these war babies will be pampered and a halo of honor will be cast about them, but this will sooner or later be dissipated by the permanent stigma of bastardy. Governmental legitimization may whitewash the stain, but it cannot wipe it out.

This is no place to discuss the care of the foundlings, but we may show an unfortunate phase of their lives. A child who does not know its parents has a natural curiosity to know something about them. When that child is old enough to realize that foster parents without a record of real parents almost always means illegitimacy it develops either a morbid sensitiveness or a callous disregard for public opinion. In the latter case the child becomes vicious and will follow a criminal career in spite of good surroundings in the home of its foster parents. The girl usually becomes a prostitute. The sensitive girl who tries to live a clean life has a constant dread that the stigma of her birth may be discovered and she moves from place to place, wherever she thinks she is safe from exposure. We sometimes read of the suicide of such a girl; sometimes melancholia develops; sometimes she marries carrying the secret through life; sometimes in despair she deliberately takes up the life of vice.

The boy, if he does not develop vicious traits, develops an overpowering wanderlust. This is not a desire to see the world, but a morbid impulse to get away from whatever locality he may be in. He does not recognize in this, the fear of exposure, as the girl does, who has the similar impulse. Few of these illegitimates have been able to raise themselves above the common level. There seems to be an inherent defect in the moral tone, a lack of stability which keeps them down. Whatever the government or the people may do to protect and legitimize the coming war babies, if this defect exists, it will assert itself.

What shall be done for the prospective mothers of the war babies? There is a tendency to excuse their fault partly because an increased birth-rate is necessary to

cover the war losses, partly because it arose through a desire to please "the heroes who have gone to be killed for their country," as one apologist puts it. Then there are the old excuses, ignorance, weakness, seduction, etc. The first of these excuses is the sorriest kind of sophistry.

It is estimated that 100,000 English troops were lost in nine months. To replace these it would require 400,000 war babies in nine months as only one-half would be males and half of these would die before their twenty-first year. It is hardly necessary to point out that girls do not consort with men to increase the birth-rate. This argument is in fact an encouragement of illegitimate intercourse, especially now, when there is a tendency to make martyrs of the mothers and heroes's children of the coming offspring. Of course it would have been a salve to the conscience of the mothers and the nation if these girls had gone through some form of a marriage ceremony, however, farcical such a marriage ceremony would have been. Marriage by proxy is legal in France and Austria and this has been suggested for the war brides of England. The circumstances under which most of these girls became war brides preclude the idea that there was any thought of maintaining permanent marital relations.

The large number of these pregnant girls and the sympathy shown them lessens in each, the sense of disgrace that usually clings to the unmarried mother or prospective mother. Instead of realizing the frightful position of the fallen woman, the girl is encouraged in the belief that she is a patriot and a martyr. Therein lies the great danger in the present attitude toward these girls. By encouraging girls in the belief that they become heroines and martyrs

when they become pregnant as a result of pleasing poor Tommy, emotional girls will deliberately try to become such heroines and martyrs.

To the girl of the poorer classes the soldier going to war is her ideal of the hero. He is going to war, to be killed for his country, and he deserves the best that she can give him, even herself. And Tommy Atkins does not refuse the gift. If she does not proffer, he will ask or plead and she will submit. I have spoken to one of these prospective mothers who was sent to relatives here when her condition became known to her family. She said she was proud when a soldier in the training camp spoke to her and she did not refuse to take a stroll with him, nor did she object when he embraced her. And she could not resist his pleadings for "one last favor for poor Tommy who was going to the war to be killed." When this Tommy left, a few days later, another Tommy took his place and made the same irresistible plea. Two of her friends did the same as she did but only one got in trouble.

Royster, quoting Sanger, says, "Twenty-five per cent. of all prostitutes have borne illegitimate children." It is impossible to say what percentage of mothers of illegitimate children become professional prostitutes, but it is probable that most of them take up this life when they find that their chances for marriage are virtually destroyed. The childless clandestine prostitute is, in this respect, in a far better position than the girl whose single indiscretion has led to pregnancy which was not interrupted. Ethics, decency, and justice are at odds in such cases.

It is possible that in the present attitude of the English people marriageable men will look with greater leniency upon the

fault of these girls who at other times would be ostracized even from the low stratum of society to which they belong. It is possible that some of the soldiers on their return from the war will acknowledge their responsibility and marry the mothers of their babies. Little reliance can be placed upon either of these possibilities. The number of these war brides and their prospective babies will force the government to take recognition of their existence instead of ignoring them and leaving them to the care of local communities. It has been proposed that they receive such aid as is given to the wives and families of enlisted soldiers.

Another proposition is, to aid these girls to go to British colonies where there is an excess of white male population over the white female population. The latter proposition appears to offer a better outlook for these unfortunates, for their ultimate fate in England will be the same as that of other unmarried mothers there. The sympathetic attitude toward them at the present moment, so different from the usual attitude toward such girls, is only an evidence of the abnormal mental condition that the stress of the times has produced, and when normal conditions will prevail again there will return the normal antipathy toward vice.

These girls deserve some sympathy, but not such as we should show the trustful girl who was deserted by a lover who had promised to marry her. In times of peace when there is no constant repetition of exciting events to disturb the emotions, girls do not submit to strangers unless they are vicious. Under the constant emotional stress girls are willing to make sacrifices and when they cannot do anything for the government, they will do something for the

soldiers and give themselves for the soldiers' pleasures. For this they deserve some consideration, not perhaps as much as they are now receiving when they are acclaimed martyrs, but more than they will receive when conditions become normal and they will be known only as unmarried mothers.

How to prevent a continuance of these vicious conditions has received little attention. Most of the war babies are expected in towns near the training camps, 2,000 in one such town having a population of less than 200,000. We can reasonably assume that some girls submitted to their lovers as a last favor before they went to the war. But the great majority do not know even the names of the fathers of their prospective babies. The girl to whom I referred in this paper does not know which one of several to blame for her condition; they were all "Tommy" to her.

The English soldier is at the present moment the popular hero in that country and he can have from the people whatever he wants from grandmother's cookies to her grand-daughter's virtue. He is not asked to curb his sexual desires nor to respect the young girl's chastity. Illegitimate intercourse with girls heretofore chaste is more wide-spread than the 20,000 pregnant war brides would indicate. It is impossible to enforce strict continence in college towns and no attempt is made to enforce it in garrison towns. In this country it is expected that soldiers will visit brothels and they are supplied with sanitary kits. It is well known that men in the navy who have been a long time on shipboard without a chance to go ashore, resort to sex perversions. In war times, when the restraint upon the fundamental instincts, which forms the basis of civilization, is lessened, the regard for the chastity of

woman is lessened and the sex instinct is no longer held in subjugation. The new recruit, fresh from the field or shop, does not at once throw off this restraint, and when he seeks the woman who will submit to him he will choose the prostitute unless the chaste girl offers herself. When he cannot find the prostitute he will seek the good girl and plead. This has been the case in England. Continental countries do nothing to discourage the presence of brothels for soldiers and we hear little about illegitimate war babies in Germany or Austria. In France abortions are openly advocated and while the advocates restrict this measure to the cases where the father is a German, the pregnant girl will not hesitate to ascribe her condition to a German though he may have appeared to her only in her dreams.

So long as the pregnant war bride is exalted as a martyr and a heroine, so long will she have emulators and so long must England bear the disgrace of encouraging this form of vice. Let it be understood that the girl who submits to the soldier is simply a vicious woman, no different in moral status from the prostitute, and fewer girls will consort with soldiers without the formality of a marriage ceremony. At the same time the soldiers must be encouraged to seek the prostitute instead of the chaste girl and he must be able to find her. Among the earliest Belgian refugees in Holland were the brothel inmates from Brussels and Antwerp. It needs no newspaper advertisement to bring them to England where they may save English girls from becoming mothers of illegitimate children. This is a radical suggestion, one that the idealist will condemn, but extraordinary conditions must be met by extraordinary measures. This seems to be

the only practical solution to a delicate situation, involving not only the chastity of thousands of girls, but the moral tone of the nation. As a final argument I will quote Sir William E. H. Lecky, England's great historian, who says, "The prostitute is ultimately the efficient guardian of virtue."

103 West 88th Street.

"SELENIUM"—ITS THERAPEUTIC VALUE—ESPECIALLY IN CANCER.

BY

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According to the Russian scientist and physico-chemist, Mendelejeff, the elements are systematically classified into eight different groups, each group showing some resemblance as to physical and chemical action, atomic and molecular weight, 2, 4, 6 and more valency, similarity in compounds, etc.

The sixth, or oxygen group, will then show oxygen, sulphur, selenium, tellurium, chromium, molybdenum, neodmium, erbium, tungsten, uranium; and, most important again, a subdivision of the sixth group. This would treat the oxygen, ozone, and further the sulphur, selenium and tellurium. For the present, let us only consider oxygen, sulphur, and, last but not least, "selenium."

This last mentioned chemical, "selenium," had been almost forgotten; its remarkable physical, chemical and therapeutic action having been entirely ignored for many dec-

ades, until in 1901 and 1902 when experimental work with sulphur, its by-products and other relative compounds of the sulphur subdivision again brought it into prominence.

Selenium was first observed as an elementary body by the Swedish chemist, John Jacob Berselius, in the year 1817, while engaged in research work at the sulphuric acid chambers at Gripsholm, Sweden, where the Fahlun pyrites had been used experimentally to produce the acid, which acid had been formerly and exclusively produced from brimstone. But circumstances led to the independent production of sulphuric acid in the above mentioned process, which in turn led to the important discovery of selenium and its compounds; the whole being worked out by Berselius and his pupils. Berselius and his pupils, however, were not only chemists and pharmacists, but also physicians; consequently they have been able to give us the results of some remarkable and profound research of this chemical as a medicine both internally and externally.

Let us now consider what progress and research have taught us concerning the use of selenium in different ailments. First of all, it is a chemical which combines and forms similar compounds to sulphur, with therapeutic qualities similar in many respects, though very different in others.

Sulphur and oxygen alone or combined can be given in comparatively large doses, internally as well as externally. Selenium by its special properties may accomplish exceptional results and cures; on the other hand, it may in small doses produce a toxic action of such violence as to be fatal to the user. This is due to its allied resemblance to arsenic-bromine.

Selenium oxydizes, selenium reduces,

selenium dissolves, neutralizes, and substitutes or enters into chemical combination.

To oxydize, reduce and neutralize is the fundamental physiological principle of any drug, no matter whether it is used as a tincture, extract, alkaloid, ointment or any other form of preparation for therapeutic purposes.

Selenium, therefore, is in the ideal sense a true remedy; a remedy which in many respects will far exceed the marvelous and wonderful radium.

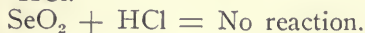
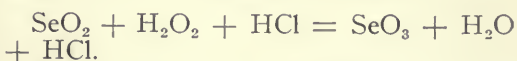
Not because selenium is much cheaper, less dangerous to handle, and equally active in the treatment of cancer and other diseases, but because the emanation of radium (radio-activity) oxidizes, but does not enter into chemical combination; while selenium oxidizes, reduces, dissolves, neutralizes and substitutes.

Selenium is a chemical highly sensitive to light, and is itself radio-active, emanating light rays conducted in the organism in such a way as not to produce a destruction of the cell tissues, or tissue waste or hyperoxidation, which term we believe in a modified sense describes the true cause of many ailments. (See "*N. Y. Med. Monatschrift*," April, 1912).

Hyperoxidation is a fast building up of new cell tissues, and logically a too rapid growth will cause an unchecked oxidation, to be followed by tissue waste.

Hyperoxidation can be proven by adding to 10 cc. of distilled water $\frac{1}{2}$ cc. of a 5% solution of seleneous acid, well mixed and divided into two equal parts in separate test tubes. Now in one test tube add 2 cc. of a 3% hydrogen peroxide solution. To both test tubes add 3 cc. of concentrated hydrochloric acid C. P. and also 2 to 3 cc. of normal urine. The tube containing the H_2O_2 will gradually become perfectly clear. The tube containing no H_2O_2 becomes orange-brown in color. These correspond to the urinary test, as previously described to dif-

ferentiate a normal urine from a patient suffering from a malignant disease.



Let us then consider two more questions. What are the chemicals that will; and where or how can we check this hyperoxidation?

Sulphur, nitrogen, phosphorous and carbon will check oxidation. The liver and spleen are the birthplace and producers of many ailments. Consider the physiological and productive importance of the liver (the largest gland in the body) producing blood, heat, blood pigments, blood-cells, bile, fat, sugar and many other important secretions and excretions, like urea, uric acid, etc., and probably as the principal pathological factor in the causation of cancer, no matter what other tissue elsewhere in the body may be looked upon as carcinomatous growth.

Therefore, check hyperoxidation, because sulphur is oxidized and eliminated too fast. In the place of sulphur we substitute selenium which readily checks hyperoxidation and with the aid of chlorides (hydrochloric acid) gradually dissolves the cancerous growth. This is the essential action of the chemical.

Life itself is a continuous chemical process of oxidation as a normal condition of all body cells. Hyperoxidation and hypoxidation as well as suboxidation, are, therefore, abnormal processes. Excessive or insufficient amounts of oxygen used in decomposition and assimilation satisfactorily explain the terms of hyperoxidation, hypoxidation and suboxidation.

Working in the laboratory for years on the research work of cancer, the result of our chemical study has conclusively taught the fact that the excessive use and absorp-

As a matter of experiment, subcutaneous and muscular injections in guinea-pigs with decomposed blood fibrin and split fibrin products have produced cachectic and cancerous conditions—and finally death. Furthermore, the basic chemical compounds derived from the fibrin-split products such as pyridin, methyl-pyridin, pyrol sulphites, etc., when injections were made in guinea-pigs, proved highly toxic, producing symptoms similar to cancer, and gradually proved fatal to the animal.

The following facts are fundamentally important:

First:—the reduction of the sulfones, cystin and taurin to sulfites and the lower sulphur compounds.

Second:—food proteins, the radical compounds are insufficiently chemically decomposed, resulting in amino acids insoluble and indigestible, due to lack of acidity and oxidation.

Third:—decomposed fibrin-split products develop at the seat of the growth, which are highly toxic to the entire system, due to hyperoxidation.

Let us further consider the use and doses of selenium which is best applied in powder or in any other dry form, in pills, etc.

The dioxide of selenium, SeO_2 is mostly used in milligramme doses per os (0.001) and mixed with sugar of milk, two or three times daily. Potassium selenate, K_2SeO_4 , or potassium selenocyanide (KSeCN) are also used, but the doses per os are considerably smaller, 1/10 milligramme (0.0001) and only twice daily, according to the case. In advanced cases a larger dose, 2 or 5 milligrammes is sometimes of great benefit, especially the selen-dioxide but only for 6 or 7 days, then stop with the powders to prevent too rapid absorption and saturation. After some days the selenium may be given in a liquid form in same doses, but the action will be markedly reduced; then

again, after a few days, give the powder to saturation as before. This also pertains to inoperable carcinoma of internal organs. Colloidal selenium either in combination with sulphur or without has been found to give best results, dose (0.001).

In instituting treatment with selenium the patient is best put to bed and closely watched, as the urine analysis daily will furnish a valuable guide. If excess of selenium, bile and urea will be found in urine and the method has to be stopped for a few days or a week. It is advisable and of particular benefit to give lime salts like calcium lactate, calcium sulphide, calcium selenide or calcium caseinate, coincidentally, the same to be administered according to the physician's judgment or the patient's idiosyncrasy. If specific gravity of urine rises from 1.002 to 1.010 or even more, and a good sulphur reaction appears, the disease is checked and under control.

For external treatment selenium-dioxide ointment or other selenium preparations can be used (0.2-0.5 gms. to 100 lanolin or paraffin) in connection with above small doses internally, will produce good results.

In non-cancerous patients the toxicity of selenium will not be so pronounced and active, the light influence will not be so strong, and the whole physiological action will be modified by the nature of the individual.

The antidotes are the same as for arsenic; magnesia and ferric hydrate. Externally 50% ichthyol ointment, with more sulphur or other sulphur compounds as sulfo-glycerole, beautifully checks the burning sensation of skin and nails. Arsenic, bromine and selenium are closely related and we mentioned that they may be substituted in some degree in the 606 preparation which in reality is little more than a preparation of As_2O_3 , 31.5%.

Selenium Test.—Patients using selenium preparations for malignant disease will gradually reach a point of saturation of the drug when its use should be either discontinued for a time or the dose lessened. The following is a simple but accurate method to determine the presence and the amount of selenium in the urine. It was also observed that selenium chemically forms selenohemoglobin similar to oxyhemoglobin of normal blood.

To 10 cc. or 15 cc. of urine is added 5 cc. of freshly prepared stannous chloride (SnCl_2) and an equal volume of ether or benzol. Shake the mixture well. The ether or benzol being much lighter than the urine will accumulate on the top. The selenium, if present, will be seen as a distinct red zone at the union of the two liquids. This test extracts all of the selenium present; therefore, it is also a quantitative test. It will also detect the most minute trace as a 3/10000 milligramme of the drug, if present.

Let us now discuss the use of selenium in the treatment of malignant growths or cancer. Up to a short time ago the internal administration of arsenic had possibly received more attention than any other internal remedy. But lately the fine colloidal suspension of other metals, such as copper and silver, have been carefully studied. Then came the introduction of selenium by Frederick Klein, followed soon after by Wassermann's experiments with this product on mice and rats, and later still by Keyser. Here the selenous acid preparations were used. Later the combinations of selenium with eosin and selenium and vanadium were tried by other investigators. Some advancement was evidently made, for subcutaneous tumors under this treatment show a liquefactive necrosis, followed by healing; while the deeper tumors failed to respond but grew and caused metastases and death. The later and more marked results were obtained from a combination of sulphur and selenium.

Our studies show that selenium unquestionably exerts a therapeutic effect on malignant tumors. The difficulty has been to find a form of the drug which, while it would attach the growth, would still be harmless to the adjacent or normal tissues. For, after all, these tumors consist of cell tissues not foreign to the human body, but rather those which apparently run wild, absorb nourishment to the detriment of surrounding structures, and finally by their toxins, formed during development and during their necrosis, poison the system. Another peculiarity of early selenium preparations was the fact that very soon the patient reached a point of saturation when the drug not only lost its effect but disturbed the biliary secretions and was followed by inanition and death. The combination of sulphur and selenium has gone a step in advance and has overcome many if not all of the former objections to its use. Too much should not be claimed for selenium, for while it is the latest and most successful form of metallic drug which has shown any real success or advancement, much is yet to be learned and explained. Czerny, Heidelberg, stated at the International Cancer Congress that "surgery could never be an ideal cure." "The attempt to cure a cancer by drugs is, after all, the line on which we are all working" is the statement made by Prof. F. C. Wood, Columbia.

During the last few years much investigative work has been done with vaccines and ferments in the hope of finding something applicable to the relief of this disease. Occasionally, but unfortunately, only occasionally, results decidedly hopeful have been obtained. It now looks as if the explanation of why these experimental efforts failed will soon be solved. The prob-

lem is a highly technical one of cellular chemistry, and one of decided scientific value.

When we stop to consider that our present only accepted method of treatment of cancer is by means of surgery, and that in spite of the most radical and thorough surgical measures over 80% of the cases so treated eventually die of the disease, it must be acknowledged that any method that affords such decided results, (selenium probably most markedly), in this class of hopeless cases, should at least be given the chance to show what it can also do in cases not classed as hopeless. The results cannot very well be worse, and judging from those obtained from this hopeless class of cases, they ought to be decidedly better than those furnished by any other known method at present.

It is unfortunate that anyone engaged in the study of cancer always meets with opposition and censure for his labors, chiefly from members of his own profession. However, there is consolation in the fact that such censorship usually comes from people entirely unacquainted with either the clinical results obtained or the scientific facts at the base of the work, and, therefore, those least qualified to criticise.

However, they must realize that every true scientific worker in the cancer field knows that every present known method of combatting this disease is far from being efficient, and that they are not only justified in experimenting in every class of case, but that it is their duty to do so.

Earache.—A remedy for earache is a dram of ether to an ounce of camphor liniment. Instil three drops in the ear and cover with warm cloth.—*Med. Summary.*

THE ANNOTATOR

Physical Efficiency and War.—The extolers of war, Bernhardt and writers of the Prussian military caste, claim that military selection is of biological advantage to the race as a purifier by fire. This might be so if it were a case of the survival of the fittest, but it is not. On the contrary it is a matter of the survival of the most unfit. Only a part of the population is exposed to the risks of war, but this part is the best, considered from more than one standpoint. War's selection, as pointed out by Professor Vernon L. Kellogg (*Social Hygiene*, Dec., 1914), is exercised on an already selected portion of the population. And every death in war means the death of a man physically superior at least, to some other man retained in the civil population.



In these days, both in Continental Europe where conscription is the rule and in Great Britain where voluntary service holds sway, from 40 to 50 per cent. are rejected on account of undersize, physical or mental defects, or disease. In such a war as the one now being waged a large proportion of those fighting are so greatly injured or mutilated that they will never be able again to take up the ordinary vocations and duties of life, but to the end of their days will be more or less of a burden to the nation and the community.

War is a decided detriment to the race from another point of view. The selected men being the flower of the land, are naturally of the greatest sexual vigor and fecundity, and the loss or disablement of these cannot but have a maleficent effect on the future of the race. This has been proved beyond the shadow of a doubt by the results that followed the Napoleonic wars. From that period the physical efficiency and stature of the French people has decreased very markedly.

Again the constant invaliding home of men broken down by injuries or disease, to join the civil population, is one of the most serious eugenic features of militarism. It is argued with some truth by German bureaucrats that the good effects of military service are many. It develops manhood in its compulsory exercises and enforced discipline and is a stimulus to patriotism and general self-control. Its obvious drawbacks however, more than counterbalance by far its redeeming virtues. As Kellogg aptly says, "when a man of character and ability gives his life in war, to his nation, he gives more than himself. He gives the long line, the ever widening wedge of those who should be his descendants." In the long run these would have greater potential value than any particular political end he may have helped to accomplish. The most important and positive factor in human progress is good breeding. Race deterioration comes chiefly from its opposite—bad breeding. Militarism encourages bad breeding. The argument then that war is a biological necessity, is based on specious reasoning and false premises.

War has been weighed in the balance and certainly found wanting, and it may be said with the utmost emphasis that no scientific or sociological phrases can bolster up the weak case in its favor.

Prison Management.—The question of the management of prisoners, or rather perhaps how to treat them while undergoing the punishment of incarceration, so as to convert them if possible into useful members of the community, when their duration is over, has long been a burning one in all civilized countries. There are those who contend that the



punishment of persons who have broken the laws of society should be severe, for it is argued that if a man or woman is punished and humiliated sufficiently, he or she will be less likely to sin again. Such is the attitude taken by penologists in Great Britain, where if an individual is convicted of a breach of the law and sent to jail, the con-

ditions there enforced are designed to deter him, according to this point of view, from lawbreaking in the future.

In this country our prisons and penitentiaries are conducted in different ways in different states. Some are managed in a somewhat lax manner, some are run on an intelligent plan, while in none is pursued the severe system that rules in Europe. In fact, generally speaking, the worst prisoner is seldom, if ever, regarded as wholly "beyond the pale," but rather as a human being who having sinned, it is true, is yet susceptible not only of reformation but of being so regenerated that he may be again allowed, in the course of time, to take his place among his fellow men.

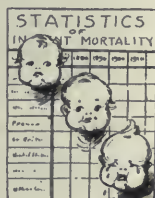
However, while the American prison system may be said to be based on tolerance and charity, it is unfortunately by no means ideal in practice, and there are prisons in this country, the management of which is a reproach to every principle of humanity. Public attention has been focussed recently on the question of prison management by the accounts which have been appearing constantly in the press of New York, regarding Sing Sing and its warden. Mr. Osborne is managing Sing Sing on a strictly humanitarian basis. He allows the prisoners a reasonable amount of liberty, he provides congenial work and amusements of various kinds, is testing a plan of internal government by the prisoners themselves, and in brief, treats the inmates of the prison as if they were responsible human beings and not brute beasts. For this, he has been subjected to violent criticism, and the most persistent efforts have been made to prejudice him in the eyes of the public.

So far as can be judged by the results thus far obtained Mr. Osborne is on the right track, and bids fair to establish his views beyond controversy. Severe treatment is no deterrent to criminal impulses, but rather tends to debase the individual and make him more callous; it seems pretty well proven that men or women who have been treated for any length of time by brutal, heartless methods are rarely ever again fit to lead free, normal lives; the "taint of the prison," almost without exception is left on them forever.

There is one most important reform that Mr. Osborne is striving to bring about, however, that will be impossible without the co-

operation of the outside public, and that is, the removal of Sing Sing prison to a more healthy site, and its rebuilding on hygienic principles. At present it is a disease trap, a veritable hotbed for tuberculosis. Surely a state of the standing and riches of New York should possess a prison which should be a model to the civilized world and not a disgrace to the country in which it stands. The great mass of the people are indifferent and give little thought to these problems. It is a pity though, when a man like Thomas Mott Osborne is willing to attack the situation and give so generously of his time and energy to the correction of evils and the betterment of conditions, that those who want to see him succeed are so chary of their support. There are times when neglect to express approbation or at least to give moral support, is almost as disastrous as to offer active opposition.

Statistics and Infant Mortality.—It has been said that figures never lie, but the truth is that statistics can seldom be wholly relied on. Some persons indeed regard them as the



Glasgow professor, Dr. Black, who said that statistics were like sausages, they depended a great deal on the old woman who made them. Of course, despite criticism, it is ob-

vious that statistics have their undeniable value. Indeed if they were kept properly, they would always be highly valuable. Unfortunately, this is by no means the case, and consequently comparison of the figures of one country with those of another country or of one district of a country with those of another district—one of the chief uses which render statistics of any value whatsoever—is all too frequently impossible.

For example, in studying the subject of infant mortality, it is essential first and foremost to have exact and reliable records of the registration of all births and deaths. When these are accurately kept we can compare one district with another district and obtain information that will help to explain why a certain section or a certain city has a greater mortality than another. In the absence of accurate records we find

ourselves in a state of confusion and cannot expect to understand or interpret the phenomena pertaining to human births and deaths.

It has been definitely shown that the death-rate of children is, in a manner of speaking, a "touchstone of the welfare of a community," and one of the supreme tests of civilization. For this reason it is a matter for deepest shame that in many a supposedly enlightened community the waste of infant life is greater than the waste of adult life in war, even in such a war as is now being waged in Europe.

It is regrettable that the methods of keeping vital statistics in many sections of our country are so unsatisfactory. As a matter of fact, in spite of the widespread discussion of the subject, the effective registration of births and deaths is not general throughout the country. The latest report of the Census Bureau calls especial attention to the inadequacies and inaccuracies of birth registration, and states that perhaps not over one-fourth of the population of the country is represented by records that can be considered in any way correct or complete.

Still births particularly have been neglected in vital statistics and there are abundant reasons for believing that a far larger proportion of babies are born dead from preventable causes than should be lost in this way. No matter how one views the situation there is no excuse for the fact that the United States which prides itself, and justly so, upon being in the van of civilization in so many respects should lag behind in so important a matter as that of vital statistics. The problem is assuming new proportions, since it has been shown that carefully kept records of births and deaths have a most important relation to public health work. Therefore it behooves the medical profession and those public spirited citizens who concern themselves with public health and the well being of the race to devote earnest, consistent efforts to securing much needed reforms in this direction, and by placing the vital statistics of the entire country—from the smallest hamlet to the largest city—on a sound and accurate basis, provide data that will not only point out problems that urgently need our attention, but that will show us from time to time what progress we are making in our efforts to solve them.



Edited by Dr. J. W. Wainwright.

The X-Ray in the Treatment of Eczema.—J. Willis Ballard, (*Medical Record*, March 27, 1915,) explains the action of the X-ray as follows: Repeated exposures to the X-ray impair the vitality of all cells situated at that point at which the rays are absorbed. Rapidly growing cells are many times more susceptible to the rays than are normal tissue cells. The substance of soft tissue standing prominently above the surrounding surface is perceptibly contracted by exposure to the X-ray. Following a series of exposures it has been observed that the skin becomes atrophied, the hair follicles and sweat glands inactive. Pain is relieved to a remarkable extent in inflammatory and malignant conditions of rapidly growing and immature cells. These facts point to the contraction of cell protoplasm. Such contraction can have but one result, local anemia as a sequence. The effects of the X-ray are inhibition of the circulatory and consequently of the nutritive processes. Used in eczema X-ray treatment is ideal in that it is cleanly, painless, certain and reasonably rapid. It is an example of a sane instance of the application of a remedial agent with a certain definite non-varying action to the relief of a certain definite pathological condition.

Eczema is distinctly a protean disease, not alone in its clinical manifestations but in its causes. All forms have certain characteristics, as inflammation of the skin, acute, subacute, or chronic. All involve the epidermis or corium, and all appear as erythema, macules, papules, vesicles, pustules or fissures. Its pathology is a circumscribed or diffuse hyperemia with dilatation of blood-vessels, congestion and edema together with cell infiltration and proliferation and it is this form of pathology which requires some local treat-

ment that will inhibit the congestion and dilation of blood-vessels, slow down rapid cell metamorphosis and soothe by long exposure to a soft tube or stimulate by short exposures to a hard tube. The technic is not difficult; the satisfaction is very great.

Strychnine in Broken Cardiac Compensation.—Newburgh, (*American Journal of the Medical Sciences*, May, 1915), reports that neither pharmacological nor clinical evidence justifies the use of strychnine in the treatment of acute or chronic heart failure. In none of the eight cases of broken compensation in which its effects were carefully studied, was the patient benefited. Compensation was not only not improved in the slightest, while four of the cases subsequently recovered compensation under the use of digitalis. Two died in the hospital and the remaining two were discharged unimproved. The failure of strychnine, the author believes, cannot be explained by assuming that the patients were beyond all therapeutic aid, since, as mentioned, half of them did regain cardiac compensation when given digitalis. These did not recover during the giving of strychnine because strychnine does not improve the work of the heart.

Venesection in Epilepsy.—Bram, (*New York Medical Journal*, March 20, 1915), declares that essential epilepsy should be attributed to nervous instability accompanied by and probably the result of abnormally high intercranial pressure. Attacks are probably consequent upon a sudden increase of general blood pressure above the

usual pressure, associated with a tremendously high increase of intercranial tension. Treatment of epilepsy by drugs in the usual cases is futile as medicinal measures do more harm than good. The reduction of intercranial pressure by the removal by venesection of blood sufficient to overcome the blood pressure seems to be the rational treatment to employ. It not only relieves the patient, but favors a cure by overcoming the epilepsy habit. The frequency of venesection and the quantity of blood to be removed at a treatment depend upon individual conditions. Dietetic and hygienic measures should also form part of the treatment. Thyroid extract or potassium iodide may occasionally be advisable as supplementary measures.

Iodine and Cinchona Powder a Substitute for Iodoform.—Mouchet and Malbec, (*Paris Medical*, January 30, 1915), recommend a combination of iodine and powdered cinchona as an odorless substitute for iodoform. The iodine and cinchona powder possess an agreeable odor, while it is antiseptic and exercises a beneficial effect on wounds, overcoming infection and odor and promoting granulation.

Boric Acid in Skin Diseases.—D. W. Montgomery, (*Journal American Medical Association*, March 13, 1915), writes of an important use of boric acid as an adjuvant to other agents in the treatment of skin diseases. He declares it a mild nonirritant and soothing antiseptic; useful in acne, when applied in hot solution; in pyogenic infections of the skin; furuncles, especially styes; in impetigo contagiosa added to a starch poultice; perlèche; runarounds and various other diseases of the skin when accompanied by a discharge.

Treatment of Pellagra by Autosero-therapy.—Palmer and Secor, (*Journal American Medical Association*, May 8, 1915), report seven consecutive, unselected cases treated by autoserotherapy with uniform success. A piece of cantharides plaster one and one-half inch square,

smear with olive oil, is placed on the patient's chest at bedtime, and in the morning the plaster is lifted at an upper corner and one c. c. of serum is withdrawn from the resulting blister with a hypodermic syringe and injected into the arm. There should be no visible reaction and the injection is repeated once a week.

Calcium Chloride in Erysipelas.—Kawakami, (in *Sei-I-Kwai Medical Journal*, April 10, 1914), reports thirty cases of erysipelas treated by injection of five to twelve drams (20 to 50 c. c.) of a one per cent. solution of calcium chloride. After the injection the patient generally had a sense of warmth; in rare instances temporary palpitation. At times there were sweating, fever, thirst and general weakness for a few hours. The local condition markedly improved, or at least, the progress of the disease became slower and a tendency to speedy recovery was noted.

Diathermia in Vesical Hemorrhage.—Iredell and Thompson, (in the *London Lancet*, May 16, 1914), referring to treatment of hematuria in cases of inoperable carcinoma of the bladder, state that, whatever effect treatment by diathermia has on the growth itself, there can be no doubt as to its effect on the hemorrhage in certain cases. In four so treated by the authors they succeeded in arresting severe hemorrhages for months. As this treatment can be carried out with no more discomfort to the patient than the introduction of an ordinary catheter, passed most gently and with strict aseptic precautions, the method is likely to prove a distinct advance on those so far regularly employed.

Salvarsan and Mercury in the Treatment of Tabes.—Dreyfus, (*New York Medical Journal*, May 29, 1915), is quoted by Conzelmann as always treating these cases with salvarsan alone for three weeks, giving one injection of 0.1 to 0.2 gram every other day. At the end of three weeks he combines the treatment with mercury. As a rule he prefers mercurial inunctions,

but often uses the salicylate. With this form of treatment, the patients improve rapidly, gastric and the lancinating pains disappear, the ataxia and visceral symptoms improve; the tabetic cases with a negative Wassermann also show improvement. Tabetic patients are emphatically advised to take a course of treatment every three months until four are taken, as several courses are thought necessary to obtain marked improvement.

Diphtheria Carriers.—Vant's Hoff, (*Monatschr. für Kinderheilkunde* XIII, No. 3, 1914), tabulates his findings obtained from examinations of cultures made from forty-one diphtheria patients diagnosed as cured from the Berlin Charity Hospital. He used platinum loops to press the bacilli from the crypts, instead of cotton swabs.

Cultures were incubated for from twenty-four to forty-eight hours. Van't Hoff found virulent bacilli present from five to ten months after leaving the hospital with a clinical cure. The bacilli did not disappear in from three to six weeks after cure as has been thought, would occur; but continued for a much longer period. The cultures were made in the homes of the discharged children who were followed for many months after discharge from the hospital.

Sodium Salvarsan.—Geo. L. Dreyfus, (*Munchener Med. Wochenschrift*, February 9, 1915), declares that this preparation of salvarsan has the advantage of being as active as old salvarsan and as easily administered as neosalvarsan. It is chemically salvarsan rendered alkaline; in a yellow powder, easily soluble in water. 0.3 gram is equivalent to 0.2 gram of salvarsan. The dose is somewhat larger than the salvarsan. It is given in doses varying from 0.15 to 0.75 gram dissolved in not more than thirty c.c. of water; average is 0.45 gram. When given alone or without mercury, it is given three times a week. The duration of treatment is from six to eight weeks. The ambulatory treatment can be followed by giving the injections at night. In several

hundred cases treated, no bad results followed, the temperature never being above 30°C.

Vaccines in Sciatica.—F. C. Zapffe, (*Journal A. M. A.*, January 16, 1915), reports a case of sciatica in a patient, occurring some weeks after an attack of gonorrhea. The examination of the urine showed staphylococci and a diphtheroid bacillus. A mixed autogenous vaccine was made from a culture of these organisms, and was injected in effective doses of 50,000 to 5,000,000 bacteria. Seven injections were given in all, and the patient recovered. Zapffe says the vaccine treatment of sciatica has not received the attention it deserves. Little is said of it in text books, and only gonococcic vaccine is mentioned. The subject is considerably misunderstood at the present time. The case, the dose, the reaction, and time of administration and duration of treatment must receive careful and individual attention, and cannot be given by rule as seen. The source of infection must be determined, and when found, the vaccine is easily obtained. Cases not amenable to vaccine therapy will yield negative results, therefore every other possible source of the sciatica should be thoroughly investigated, before vaccine therapy is tried. The case is reported to call attention to one source from which sciatica may originate.

Oxidasol.—This product is described as the nucleinate of manganese by A. Japelli, (*Riforma Medica*, February 13, 1915). He states further that manganese has the power of activating intraorganic oxidation, while maintaining the structural unity of the red blood corpuscles. Salts of manganese may be regarded as metallic ferments; they exert favorable action on alcoholic fermentation. It has been shown that oxidasol has a favorable influence on the biological properties of the blood serum which depend on the bone marrow, but does not modify the natural resistance of the individual against intoxications. These experiments showed very little action on nitrogenous elimination.

RATIONAL ORGANOOTHERAPY

Conducted under the editorial direction of Dr. Henry R. Harrower.

The Internal Secretions in "Run-Down Conditions."—Many a chronic and intractable disorder is due to an overlooked defect in the production of the hormones of the internal secretory glands. Increasingly greater stress is being laid upon the importance of these chemical messengers and there is now little doubt that in health as well as in disease they regulate and correlate the metabolic activities of the body.

Many a patient under treatment for some more or less obscure trouble has associated with it a condition of hormone deficiency; for when an individual is "run-down" with the usual manifestations of this condition—nerves on edge, oxidation poor, elimination low, muscles easily tired out, and, almost invariably, the digestion and assimilation faulty—it is not conceivable that when practically all the other activities of the body are below par, the internal secretory organs are working normally and producing their necessary quota of hormones. *In fact, this lack is often the sole cause of many conditions of this character, and pluri-glandular insufficiency should be sought for more generally than it is at present, and its importance appreciated in a more practical way.*

It would almost seem that the importance of hormone stimuli is overlooked—at least by many physicians. When one realizes the fact that these hormones are stable chemical substances of a non-colloid nature produced and found in the normal metabolism of certain cells (usually of the ductless glands), and that they are carried by the blood or lymph to various remote organs where they excite numerous manifestations of physiologic activity, this correlation between the organ of origin of the hormone and the organ or organs thus stimulated

assumes considerable importance. "Hormones are to physiology what radium is to chemistry."

Among the numerous internal secretory principles are those that exert a cell-stimulative action on the hormones proper, and those that exert a retarding action—chalones (Gr. I restrain) first mentioned by Sir Edward Schäfer. The scope of action of the "original hormone"—secretin—seems to be limited entirely to the alimentary tract, but others like the thyroid and gonad hormones exert a tonic action which does not seem to be limited to any special cells or functions, but influences the body as a whole even though this stimulating action may seem to be more especially concerned first with the corresponding organs—the thyroid or gonads,—and also the other internal secretory organs. Now we know according to Hallion's law of homo-stimulation "The Essential Basis of Organo-therapy" (See *American Medicine*, April, 1915, page 253) that we can enhance the activity of the various internal secretory glands and hence in rundown conditions it would seem to be an advantage to attempt to stimulate those organs which under normal circumstances control tone and general cell activity of the body.

Theoretically this sounds very plausible, and its practical application is equally encouraging even though the administration of combinations of gland extracts is often empirical, for it is not always possible to bring forward definite proof as to whether the ductless glands are not as active as they should be, and if so, which of them and to what extent. It is a procedure that has secured results in a large class of cases, that has been referred to a number of times in French, Italian and English literature, and its advantages can only be gauged,

not by the seeming reasonableness of the procedure or by the critical unreasonableness to the skeptic, but by the only test available under the circumstances—the test of results.

The administrations of combinations of the thyroid, gonads and perhaps the pituitary gland (for this latter organ exerts a remarkable tonic influence upon all unstriated muscle including that of the cardio-vascular system and the intestines) is likely to benefit run-down conditions by the general stimulating action that the units of this combination exert upon the organs corresponding to those from which it is made, as well as upon the metabolism generally. This increased cellular activity is of considerable advantage—sometimes the results obtained from this form of treatment are remarkable, for not only is the sum total of the tonic hormones increased, but the increased cell activity augments the response of the organism to such other therapeutic procedures as may be given simultaneously.

A number of writers have drawn attention to the importance of certain of the ductless glands in the causation and treatment of the host of functionally neurotic and mental asthenic conditions which are manifestations of run-down cellular action. Among these will be found such alienists as von Frankl-Hochwart, Laignel-Lavastine, Delille, together with such internists as Martinet, Gilbert and Lorand and several others of equal prominence.

Of course one cannot expect spectacular results in every case, although it is surprising how frequently the results far exceed expectations, nor can we expect good results in every case thus treated, but the prospect of success is sufficiently alluring to warrant the application of pluri-glandular therapy as a part of the treatment of all convalescent, neurasthenic and run-down cases.

The Ductless Glands and Dysmenorrhea.—It may be recalled that reference was recently made to the position taken by Professor Dalché in regard to the relation of the thyroid to dysmenorrhea in young women. He has treated many cases with

very satisfactory results by giving thyroid extract. Now come two other French clinicians MM. Siredey and Lemaire (*Paris Médical*, April 25, 1914) who consider various phases of dysmenorrhea in older women including that which not infrequently occurs at or near the climacteric. In the majority of women at this age the disturbances are due to lack of equilibrium between the various internal secretory organs, and are principally found in individuals of a neuro-arthritic type with a tendency to obesity, disturbances in the thyroid gland, both deficiency and excess, slight pituitary insufficiency and adrenal overactivity. Hyperthyroidism, however, is by far the most frequent condition, and in the opinion of the above writers, pluri-glandular therapy is indicated. The administration of combinations of thyroid, ovaries and perhaps pituitary gland not only reduces the attacks of pain, but also favorably influences the reduced metabolic activity and with it the obesity. Special stress is laid upon the advantage of combining with this medication an antitoxic diet in which animal products are reduced, and alkaline diuretic medication is given.

It is surprising how many reports are being published which clinically prove that pluri-glandular therapy is more effective in many conditions than the use of single gland extracts and probably this is more true in the genital disturbances of women than in any other single class of cases. Small doses suffice; for example, $\frac{1}{4}$ grain each of thyroid extract and pituitary extract and three to five grains of corpus luteum given together three times a day, preferably between meals.

The Difference Between Hormones and Enzymes.—The subject of hormonology is still in its youth, and not infrequently physicians confound the two principles which render organotherapeutic products active. Hence the importance of the difference between hormones and enzymes must be emphasized.

Enzymes are unstable chemical substances—unorganized ferments—which are capable of causing chemical changes in certain other substances without themselves being permanently changed in the process. Among these are such well known substances as

diastase, pepsin, trypsin, etc. These are invariably destroyed by heat and are capable of performing their function outside of the tissues.

Hormones, on the other hand, are complex but quite definite chemical substances produced in various glands; their function is to activate the production of enzymes and ferment action, and, generally speaking to act as excitants to numerous other manifestations of physiologic activity. Hormones are carried directly into the blood, are stable, and can withstand a much greater degree of heat—most hormone bearing products can be boiled without destroying their activity. A ferment consists of the product of the cell producing it, the proferment, *plus the hormone*, usually secretin. The proferment is not active unless it has been influenced by the hormone, while the hormone itself does not seem to be influenced save only as it is used up in the activation of the ferment precursor. Its work as a chemical messenger is one of the marvels of physiologic chemistry.

The Physiology and Therapeutics of the Corpora Lutea.—The following very concise resumé of the facts established by recent clinical and experimental investigations regarding the function and therapeutic action of corpora lutea is taken from *Therapeutic Notes*, 1915, xxii, p. 31.

The human ovary has an internal secretion. This internal secretion controls menstruation and maintains pregnancy during the early months.

The corpus luteum is the structure concerned and seemingly the source of the internal secretion.

The corpus luteum of pregnancy is more stable than that of ovulation.

The corpus luteum has a selective action on the endometrium and prepares the uterine mucosa for the reception of the ovum.

The development of the corpus luteum is synchronous with the onset of menstruation.

A relation exists between the corpus luteum and the other internal secretory structures of the body.

Removal of the corpus luteum causes cessation of the menstrual function.

Animal corpora lutea, when administered

by the mouth in average doses, are non-toxic.

Those who have employed corpus luteum (the fresh yellow body) or a desiccated extract of it, using proper discretion, have found out that it is much more potent than gross ovarian preparations, and that its administration in suitable cases is followed by striking and gratifying results.

The particular conditions for which extracts of the corpus luteum will be found serviceable are:

- 1, Functional amenorrhea or scanty menstruation;
- 2, Dysmenorrhea of ovarian origin;
- 3, Manifestations of physiologic or artificial menopause, such as nervous or congestive disturbances of reflex origin (hot flashes, psychoneuroses, etc.);
- 4, Neurasthenic symptoms, during menstrual life;
- 5, Sterility not due to pyogenic infection or mechanical obstruction;
- 6, When the function of one ovary is impaired, or one ovary has been removed, and the compensatory activity of the other is insufficient;
- 7, Repeated abortions, not due to disease or mechanical factors;
- 8, Hyperemesis in the early months of pregnancy.

Exophthalmic Goiter in Children is not a very common condition, since it is much more usual at or just after adolescence and, of course, considerably more common in girls and young women than in youths. The first and chief essential in the treatment is mental and physical rest. A change of environment is also beneficial.

Since exophthalmic goiter is essentially a toxemia, all other toxic conditions should be reduced as much as possible or entirely eliminated. This calls for careful regulation of the diet with a reduction of the amount of putrefiable proteids that are given; in fact, in such cases meat can with advantage be entirely dispensed with. There is on record a case of hyperthyroidism with diarrhea and marked intestinal symptoms in which castor oil, opium and other astringents had previously failed, where the administration of secretin successfully checked the diarrhea and benefited the general condition. In any event, this hormone is of advantage in treating the digestive insufficiencies in conjunction with

exophthalmic goiter or for that matter any other chronic condition.

Attention has been called quite recently to the importance of also removing affected tonsils and adenoids in persons suffering from this disorder upon whom an operation has been decided, since disturbances of the tonsils and adenoids are so common in children, and it would seem doubly important to look into this matter as an associated part of the treatment.

It is suggested that there is a thymus origin for many cases of Graves' disease just as disturbance in the balance between ovarian secretion and the other internal secretions is undoubtedly a common factor in its causation in young women. It would seem that in young children, the thymus is more likely to be a cause than otherwise and if so, recourse to thymus therapy should offer considerable prospect of success; as a matter of fact, a number of authorities are convinced that thymus medication is of considerable value in exophthalmic goiter. Dor, of Lyons, reports that "nothing ameliorates exophthalmic goiter like thymus." Solis Cohen, of Philadelphia, prefers this extract to all other organotherapeutic preparations, and save for a local iodine ointment and suggestions regarding diet, hygiene and hydrotherapy, he uses thymus medication alone, giving 7-½ to 45 grains per day in divided doses for months.

In cases where the heart symptoms are quite marked, it is well to remember that adrenalin given in doses of 2 to 10 minims depending, of course, upon the age and reactivity of the patient has caused considerable benefit to these particular symptoms. In such cases, it may be of still more advantage to give total adrenal substance in ¼ to 1 grain doses for a period of months.

The X-ray is recommended very highly by some physicians and, of course, the surgeons point with pride, which, by the way, is not always unmingled with chagrin, to the results of ligation or partial extirpation. It would seem, however, that all medical and organotherapeutic means should be thoroughly tried before recourse to operation, especially in young children, for in such cases the hyperthyroidism has not become such a decided habit, and is more likely to respond to organotherapy and other associated procedures.

"The Limitations of Organotherapeutics."—In one of the quite recent systems of therapeutics (Forchheimer's "Therapeutics of Internal Diseases," Vol 1, Chap. 2, p. 37.) Reid Hunt of Washington, D. C., makes some statements regarding the limitations of organotherapeutics which may be quoted here simply to show why some physicians still forego many of the advantages to be obtained from the application of the principles of organotherapy in their practice: "Organotherapeutics is one of the oldest and most widespread system of therapeutics. After many centuries of empiricism, during which not a single result of value was obtained, it almost disappeared, except in popular and sectarian medicine. It was revived by Brown-Séquard in 1889. Its recent development, especially on the part of manufacturers, has been not unlike that of ancient times." A foot note connected with the above statement should also be reproduced: "267 glandular products were recently found listed in trade journals. The list included brain, spinal cord, liver, kidney, etc., and did not differ greatly from the lists of a century or two ago; the chief difference is that the indications are expressed in more modern but none the less obscure phraseology."

One could enumerate without very much trouble considerably more than 267 organotherapeutic products—without exaggeration there are fully this number made in France alone—and we admit that usually these preparations are given fancy names to connect them automatically with their manufacturers. This is hardly a reflection upon organotherapy, but rather upon manufacturing pharmacy—a subject which it is not within our province to discuss here. Many of those who read the above quotations once or twice will wonder if the author ever used organotherapeutic products in his practice, and whether he has secured personal advantage in his practice from the activities "especially on the part of the manufacturers" in putting organotherapy on a practical basis and giving to us such preparations as adrenalin, pituitary liquid, desiccated thyroids and not a few other products?

It is strange how "authorities" insist upon being skeptics. It is also strange that government chemists are permitted to be con-

sidered as authorities on therapeutics. Although the present writer does not consider himself an authority—he merely has a greater interest in certain phases of therapeutics than some others and has studied it a little bit more carefully, perhaps, than some he could name—he has had enough personal experience, and has seen enough work done with various glandular products to convince him that the limitations of organotherapeutics are by no means as narrow as a study of the above quotations would indicate.

The tests-and-results method is the basis whereby manufacturers buy their raw material in order that they may know what they are putting into their products or using in their business. It should be none the less the essential basis by which physicians consider new ideas in therapeutics as well as modern preparations, and any open-minded physician, who will give a more extended trial to many phases of organotherapy will say as did a physician recently in conversation with the writer, "This certainly is interesting, and I am going to find out how much I have been missing by not knowing about these things."

PRACTICAL POINTERS.

"Hormones are to physiology what radium is to chemistry."

Sensitiveness to cold is a common symptom of thyroid insufficiency (Levi).

Sensitiveness to heat is stated by Lagane to be frequently found in pituitary insufficiency.

Prostatic Hypertrophy is sometimes benefited by the use of 5 grains of desiccated prostate gland t. i. d.

Spleen Extract is stated to be of benefit in increasing nutrition. It may be given fresh or in powder or tablets.

In severe febrile conditions beware of acute exhaustion of the adrenal glands

with resulting hypoadrenia. Prevent it by adrenal therapy.

Aspirin Idiosyncrasy.—It has been remarked that individuals with an idiosyncrasy to aspirin and acetylsalicylic acid often manifest symptoms of hypothyroidism. This, then, should lead one to look for other manifestations of this disorder.

Acute adrenal insufficiency is diagnosed by producing the "*ligne blanche sur-rénale*" of Sergent. This is a dermatographic sign consisting of a white line on the abdomen following penciling with the finger, remaining sometimes two or three minutes.

First Use of Pituitary.—Although the internal secretory capacity of the infundibulum was first mentioned in 1895 by Sir E. A. Schäfer of Edinburgh, it was not used in therapeutics until 1909. W. Blair Bell of Liverpool has the honor of introducing a preparation of the infundibulum made under the direction of H. H. Dale of the Wellcome Research Laboratories.

Pancreatin by Mouth.—Some emphatic statements to the contrary, notwithstanding, pancreatin may be given in 3 to 10 grain doses by mouth. It is a splendid digestant and gastric digestion does not destroy it. Brieger recommends it given with no attempt to protect it from the stomach and adds that it is a valuable adjunct in tuberculosis.



"BIRTH CONTROL."

To the Editor

AMERICAN MEDICINE:

About a year ago a correspondent in AMERICAN MEDICINE comparing his efforts

in behalf of what has since come to be known as "Birth Control" to that of "a voice crying in the wilderness," predicted that before long "this theme would be the subject of the foremost editorials of respectable journals."

While editorial comment in our journals has been lacking on this subject so far, it has meanwhile been given a large space in the reading columns of a type of "respectable" journalism, which is said to pipe indifferently twice a day into the humblest homes either the "sewage of civilization," or what it esteems to be the "pure waters of the gospel"—according to one's conception of the needs of the time. In this service is enlisted, regardless of expense, an auxiliary corps recruited from among those who have achieved the greatest notoriety in their professed callings, whether it be as preacher, prize fighter or what in less sophisticated days would be called "panders" or "pimps," but which now are referred to as merely "denizens of the underworld."

Probably the most sanguine anticipation of this advocate did not presage such a meeting as the one held at the Academy of Medicine in New York last month, just a year from the date of the above prophecy. In appreciation of this fact one of the principal speakers at this meeting, who is both a doctor and a member of the Board of Education felicitated his hearers, largely young men and women, on the "progress" that had made such a meeting a possibility.

Another speaker, now well out of the "wilderness" did not spare his own profession by saying that the success of this propaganda would obviate the criminal abortions now performed by the regular and irregular members of the medical profession almost exclusively.

This statement cleared up the mysteries of the old time professional abortionists some of whose places were landmarks in every community.

It also bears out the facts disclosed at the investigation of the coroner's office in the city, where it was shown that the "pouparlers between the criminal authorities" and the "criminal operators" were carried on in the rooms of a recognized medical association!

There may be some consolation for those non-"progressives" who resent an imputa-

tion such as this in the knowledge that those largely responsible for the meeting had the distinction of having a previous offering of theirs in the cause of "morality," through the medium of the drama, suppressed by the police.

JOHN P. DAVIN, M. D.



The Intensive Iodine Treatment of Pulmonary Tuberculosis.—Boudreau, (*Journal de médecine de Bordeaux*, January 4, 1914), recommends after over ten years' experience, the continuous administration of the French tincture of iodine, one part by weight in twelve of alcohol, without potassium iodide, in large doses in the treatment of tuberculosis, especially pulmonary. The doses should be moderate at first, but later gradually pushed to the extreme limits of tolerance, from 100 to 350 drops of the tincture being ingested daily in milk, coffee, decoctions or infusions, or diluted wine. Only in pure water is the taste of the iodine unpleasant. Iodism is extremely infrequent, and the author considers tincture of iodine far less productive of untoward results than potassium iodide. From twenty-five to seventy drops of the tincture are taken in each glassful. The larger doses are used especially in the advanced cases of tuberculosis, and according to the author, have often brought about a surprising reversal from the lethal trend in these cases, with ultimate recovery. In the numerous incipient cases treated, smaller amounts were frequently sufficient, but at times the larger amounts had to be used, and even then the condition was occasionally refractory to the treatment, a marked variation in this respect being noted in the various cases. In children six or seven years old forty to sixty drops a day, after a gradual ascent in doses, were perfectly borne. The benefit procured by the treatment, even in apparently hopeless cases, was shown in the unexpected recovery of many. Cures were obtained in grave cases even where the ordinary rest treatment was impracticable. The effect of the iodine in tuberculous cases is ascribed by the author to its increasing the leucocytes, especially large mononuclears, and augmenting phagocytic activity. The tonic and defensive functions of the ductless glands are also increased by iodine; it is possible that it is useful as a direct germicide. Degenerated and poorly staining tubercle bacilli were observed in the sputum in treated cases. In threatening tuberculosis of the intestines, from swallowing sputum, iodine rather promptly inhibits the

morbid process. The author strongly advises that the treatment be used in cases of tuberculous meningitis, renal tuberculosis, and tuberculous lymphadenitis.

Painless Labor.—"So much has been said recently regarding 'twilight sleep' in parturition, its benefits and its dangers," says M. W. Kapp, (*Medical Record*, Nov. 14, 1914), "that I feel it my duty to give to the medical profession my experience in the last three years' with a method of producing a condition of shockless and painless parturition.

I have practiced medicine, as a general practitioner, for twenty years. I have always had a good obstetrical practice. The dread and agony of the parturient mother has always worried me. Motherhood is such a sacred condition and it should be such a happy condition from its first moment through all its stages. With so many the dread of the hours of labor depresses them and without any question has its depressing effect upon the child. I feel that I have been able during the last three years to lighten the burdens of the mother very materially.

I use my method as freely in the most humble home as I would in the hospital. It requires no corps of trained assistants. The country doctor can use it as readily as the city doctor who attends the 'four hundred.'

When I am called to a woman in labor and I am sure that the pains are real labor pains I wait until the expectant mother shows some signs of distress, if it is a first confinement. That is so she may know what labor pains really are. If it is a case of a mother who has had one or more children I do not wait for the pains to become even severe. I am presuming that the patient has been properly prepared for accouchement. I then give the patient (1-12) one-twelfth grain of heroin hydrochloride hypodermically. Within twenty minutes she will feel drowsy and no longer feel the sting of the pains.

At this time I sit down by the patient and explain to her the need of her bearing down when she feels the contractions. Between pains she will often fall into a light sleep. When I find she is progressing nicely I often go away and make a call or two, or at night I may lie down for an hour, leaving a nurse or someone with the patient who will call me if I am needed. If labor is getting well advanced I stay by the patient's side and watch every advance carefully.

The effect of one injection of one-twelfth grain heroin usually lasts about three hours. Some very severe cases need more heroin before the end of three hours. I simply watch my patient and if the pains are getting severe again I sometimes give another full dose. Again I may give only one-twenty-fourth or one-thirty-sixth of a grain. I aim never to have more than one-twelfth of a grain of heroin in action at one time. I have found that one-twelfth of a grain is the best average dose. I

tried one-sixth of a grain several times and it spoiled my case by retarding the pains. One-twelfth grain inhibits the sensory nerves but does not affect the motor nerves. I have used as high as three and one-half doses in one case. I rarely need more than one or two.

I have used it in about one hundred cases all in general practice. I have no trouble with the babies being blue, at least no more than I ever have had. Any long case of labor may cause a child to be exhausted when born.

Heroin properly administered will hasten labor rather than retard it. It lightens pain so the mother if properly directed will aid in the expelling of the child. The use of morphine and scopolamine will retard labor almost every time. I have had no severe cases of hemorrhage while using heroin.

The mother usually rests very quietly after labor and has much less shock than by the old method. Many doctors seem not to appreciate the condition of shock after labor. I have sometimes used a little chloroform at the last part of labor, but that is not necessary if the heroin has been properly managed.

I have had a few cases of inertia of the uterine muscles in which heroin did not seem to do much good, but by using divided doses of pituitrin labor was properly completed.

I do not claim that my methods and my technic are the best or are correct. I write this so that others who have better facilities to develop the correct method may be urged to do so. It is by far the best method of lessening the fear and pain of the lying-in chamber that I have ever been able to find, and best of all I can use it in my general practice without fear.

The Freiburg method and the nitrous oxide and oxygen methods are good but they are only to be used in hospitals. I believe that if heroin were used with the same technic as the morphine and scopolamine treatment the results would be equal, and there would be no danger involved."

GENERAL TOPICS

The Uric Acid of the Blood.—An important part of the studies which has been carried out in diseases of metabolism, especially gout, says an editorial writer in the *Medical Record* (May 29, 1915), has been the estimation of the amount of uric acid in the blood. Numerous methods have been tried, and only that devised by Folin has been adjudged reliable. Now, however, new evidence has been presented, and as a result all the former work must be swept into the discard and the problem must be at-

tacked from the beginning. Benedict (*Jour. Biol. Chem.*, 1915, xx, 633) has pointed out defects in the Folin method and has presented a modification. But what is of the greatest importance he has shown that the uric acid exists in blood in two forms, a "free" and a "combined." Thus ox blood which was believed to contain 0.2 mg. per 100 c.c. was found as a rule to contain about 7 mg. of total uric acid per 100 c.c. of blood, and, moreover, it was contained practically in its entirety in the red blood-cells. Chicken blood, on the other hand, showed practically none of the combined uric acid, the free acid present being contained only in the serum, none of it being in the corpuscles. If the ox blood were allowed to stand at room temperature and protected from bacterial contamination there was found to take place a gradual transition from the combined to the free form of uric acid, apparently due to the action of some ferment. Just what the result of these observations will be cannot, of course, at this time be safely predicted. It is obvious, however, that all of the work on the uric acid content of the blood will have to be repeated. Numerous hypotheses will at once suggest themselves. Benedict suggests that possibly the free uric acid is that which is ready for excretion as such, while the combined is capable of further catabolism. The state in which the uric acid exists in the red cells is another interesting question. It is discouraging in a way to think of the amount of work which has been done to no purpose, but it is highly encouraging to know that a definite step forward has been made.

A New Ruling Under the Harrison Antinarcotic Law.—No sooner do we get used to the workings of the federal antinarcotic law, says *The American Journal of Clinical Medicine* (June), as in the beginning interpreted when a new decision comes from Washington that completely changes the meaning of some sections. The Decision 2194, read as follows:

Synthetic Substitutes.—In exempting from its provisions certain preparations and remedies, the Act (Sec. 6) expressly excludes from such exemptions "preparations which contain cocaine or any of its salts or alpha or beta-eucaine or any of their salts or any synthetic substitute for them." To effect the obvious purpose of this provision of the Act, the words "synthetic substitutes" are held to apply to any artificial substance or preparation which is or may be substituted for cocaine, alpha or beta-eucaine, or any of their salts as ordinarily prescribed or used, and not necessarily to a purely synthetic substitute which, chemically, is identically the same as the drug for which it may be so substituted.

Further, both the title and Sec. 1 of this law include "opium or coca-leaves or any compound, manufacture, salt, derivative or preparation thereof" and, under a liberal interpretation of

the word "derivative," from a chemical point of view, the several cocaine substitutes would also be clearly included.

Manufacturers of, dealers in, and physicians prescribing any such substitutes, as above defined, should, therefore, register and otherwise conform to the requirements of this law and the regulations issued thereunder.

The meaning of this decision plainly is, that *any remedy* that is used *for the same purpose* as cocaine or alpha or beta-eucaine, *providing it is a synthetic*, comes under the provisions of the federal antinarcotic law, and in accordance therewith physicians, dentists, and veterinarians are required by law to keep records of all such drugs that they may dispense, distribute, or administer. Under a prior ruling, such remedies as novocaine, stovaine, alypin, orthoform, and the like were construed not to be narcotics. Under this latest ruling, which, by the way, was issued on April 26, *they are now to be included in the provisions of the Act*, and the fact that not one of them is known to be used as a habit-forming drug makes no difference (to the Commissioner) whatever.

Every physician who has on hand and is using any such preparation as a local anesthetic in a manner similar to cocaine must hereafter keep a record of all he may dispense, and must add to his inventory of March 1, the amount of such drug which he now has in his possession.

Meeting of the American Medical Editors' Association.—The annual meeting of the American Medical Editors' Association will be held at the McAlpin Hotel, New York City, on October 18th and 19th.

The forethought of the Executive Committee in arranging for the annual meeting in the East, instead of subjecting its members to the long tiresome journey to the Pacific coast, has been clearly manifested by the great number who have already expressed their intention of attending the forthcoming meeting.

A literary program of unusual interest has been arranged. Papers of particular importance to medical editors upon subjects of momentary and future value will be presented by men of national reputation, details of which will be mailed later.

The annual banquet will be held on the evening of Tuesday, October 19th, at the McAlpin Hotel, and while past events have left ineffaceable and delightful memories, the coming occasion will surpass them all.

The annual meeting will be held at a time when New York City offers the greatest opportunity for those who desire to observe clinical work and for those who are interested in the business side, a more propitious time and place could not be selected.

A ladies reception committee has been appointed and members are earnestly urged to bring their wives and families.

American Medicine

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The Conservation of Public Health at the present time, unfortunately for humanity, is receiving little attention anywhere except on this side of the Atlantic. The principal nations of Europe are devoting themselves so assiduously to the destruction of life, that health matters, except so far as the health of their warriors is concerned, must "go by the board," at any rate, to a large extent. What the aftermath of the war will be with regard to public health, no one can foretell, but it seems obvious with the blotting out of so large a proportion of the young and vigorous adult male population, that the European races at large must undergo a considerable amount of deterioration, as an inevitable consequence of which many diseases—especially those of a degenerative nature or due to depressed conditions—will probably increase and multiply. A fertile soil will be general owing to the widespread lack of vitality of the people at large, and therefore, it may be predicted that public health in Europe will be at a lower ebb for the next few years than it has been in three decades. However, amid the saddening and sickening scenes which Europe has witnessed in the bloody campaigns of the past twelve months, a silver lining in the clouds of gloom has been apparent. Except in Serbia there has been

no epidemic outbreak, a result that can be directly attributed to the great advances that have been made in sanitation and the control of disease. Not only has this been a remarkable triumph for the medical men of the respective armies, but a splendid testimonial to the soundness and efficiency of modern prophylactic methods.

The progress of public health in the United States on the whole has been very satisfactory. There are parts of the country where health matters are somewhat at a standstill, or perhaps it may better be said where advance has been slow, but taking everything into consideration there is much cause for congratulation at the conditions to be observed on every side. The main reason for optimism is that the people themselves are awakening to the great importance of public health problems and are taking an active as well as intelligent interest in their solution; when this occurs in connection with any great public question the battle is more than half won. The man in the street is beginning to grasp the fact that it is his individual concern that the community should be healthy, and for selfish reasons, if no other, he is, therefore, commencing to insist not only that these questions be given proper attention, but that

money spent in this direction shall be money well spent. Striking evidence of this attitude on the part of the intelligent public was afforded by the attendance at the recent meeting of the American Public Health Association which opened its annual convention in Rochester, N. Y., on September 7th. Especial importance was given to the opening by the fact that Governor Whitman welcomed the members of the Association to Rochester in an eloquent and pertinent speech, indicating an interest in the subject and a comprehension of its practical problems greater than any lay governor has ever shown up to the present time. A great deal of what Governor Whitman said, coming from a layman and in his position of authority and prominence, is especially deserving of comment. He pointed out, for instance, that there were 140,000 deaths in New York State during the year 1914, and if the estimates of the Committee of One Hundred on the Conservation of Human Vitality are to be relied upon, 40 per cent. of this mortality might have been prevented. Over 23,000 of these 140,000 deaths occurred among infants under one year of age. It was shown, however, that New York, in a way that few other states could boast of, had grappled with the problem of infant mortality—and with much success. In 1913 the infant mortality rate for the state was 109 deaths under one year for every 1,000 births. In 1914 it fell to 101, while 1915 has so far shown even a better record than 1914.

As for the acute communicable diseases such as typhoid fever, diphtheria, scarlet fever and the like, year by year these are coming more completely under control. Counterbalancing these victories in the realm of the transmissible maladies, it is

disappointing to observe that the degenerative diseases of adult life—especially those which usually exhibit themselves during middle life—are increasing with quite disconcerting rapidity. The situation is all the more regrettable since the undue prevalence of these diseases can be traced immediately to carelessness in observing the simple and logical requirements of personal hygiene. The majority of city men, particularly those who are prosperous, almost invariably eat and drink too much, apply themselves too closely to their work, and almost without exception take insufficient exercise in the open air. Business cares are allowed to absorb the attention to the exclusion of simple and harmless forms of amusement, and too often worry becomes a habit that practically dominates every hour awake. Recent researches have emphasized the depressing effect of such emotions as worry and anxiety, not only on the nervous system and bodily functions in general, but also on the more remote phenomena of the body, as for instance the development of the internal secretions, the hormones and so on. It is not surprising, therefore, that those who live unwisely and worry constantly should fall victims to the diseases produced by disordered nervous systems and deranged metabolism. Many other speakers at the convention, as well as Governor Whitman, referred to the rapid increase of deaths from diseases caused by errors of personal hygiene, and it is evident that this question is one of the most important demanding the attention of public health workers today.

Much satisfaction was shown at the character of Governor Whitman's address, for it augurs well for the conduct of public health matters in New York State. The state has been blessed by having officials at the

head of its health department whose ability and integrity have left nothing to be desired. Unfortunately their efforts too often have been handicapped and embarrassed by politicians who have been woefully ignorant of the purposes and possibilities of public medicine. With the governor of the state showing not only so great an interest, but so broad and extensive knowledge of the public health situation, little fear need be entertained of backsliding. On the contrary, there is abundant reason for anticipating greater progress than ever before. Governor Whitman probably does not realize the importance of his address at the Rochester meeting, but because of its timeliness and comprehensive character there can be no doubt that it will have a great and far-reaching influence on health affairs throughout the country.

The Achievements and Failures in Public Health Work.—Among the other important addresses given, that of Dr. William T. Sedgwick, of the Massachusetts Institute of Technology and President of the Association was particularly noteworthy. He pointed out that up to 1886, vaccination was the principal form in which preventive medicine undertook to promote the public health, but a long step forward was taken in that year, when as a result of a reorganization of the State Board of Health of Massachusetts, sanitary engineering became a recognized and indispensable branch of public science. Bacteriological laboratories for the quick detection of dangerous infections have now been installed almost everywhere, at any rate, in the more progressive American cities and towns. The medical and sanitary supervision of schools and school buildings have been begun and there have been invented and put within the reach

of all but the very poor the most complete, convenient and salubrious heating and ventilating appliances in the world for houses, theatres, halls, hotels and workshops.

On the other hand, failure has attended the attempt to achieve many much needed sanitary conditions. Our water supplies are to a great extent either in good condition or on the way to improvement, but our sewage disposal systems, especially in our smaller communities, are still in many cases far from satisfactory.

Probably, however, the most flagrant defect in American sanitation today is the almost universal lack of public convenience or toilet stations in American cities and towns. Neglect to provide proper toilet facilities is to fail in one of the most essential of public health requirements.

Other causes for chagrin are the failure of efforts to reduce typhoid fever in the United States as low as our knowledge of its means of transmission would seem to make possible, and our seeming inability in spite of strenuous attempts to decrease American infant mortality to any real extent.

Withal, therefore, the failures as well as the achievements in public health work have been great, and quite in keeping with what we are pleased to call the American spirit. When the American people set out to do a thing they usually try to do it in a large way. Consequently they are often as conspicuous in their failures as in their successes. This tendency has been strikingly exhibited in sanitary work in America. In certain important phases of public health endeavor American municipalities have not only shown the way but vastly improved upon the methods in practice in European countries, while in other and no less important phases they have failed ignominiously.

Thus, for example, New York City easily leads the world in the organization and administration of its department of health. Professor Sedgwick, however, placed his finger upon one of the most prominent failures when he called attention to the lack of public convenience stations in New York, as well as all other American cities. A stranger from Europe is filled with amazement and something approaching to disgust when he looks for and is unable to discover a really decent public toilet in an American center of population. What a contrast to London, or indeed to any fair sized English city! In London the public toilets and washing places are clean, adequate and almost luxurious, and it assuredly shows a painful want of civic pride and decency on the part of the authorities of American cities that so little attention is paid to providing similar essentials to comfort, cleanliness and sanitation.

Then again with regard to typhoid fever. On numerous occasions, AMERICAN MEDICINE, and many of its contemporaries have earnestly and persistently laid stress on the fact that it is nothing less than a disgrace that an easily preventable disease like typhoid is allowed to occur in any community that lays claim to ordinary cleanliness and decency. Essentially a filth disease and transmitted by a lapse of the most elementary rules of hygiene, its occurrence invariably indicates that some one has been guilty of neglect or indifference. Typhoid is one of the most definitely preventable of the communicable diseases. Europe has accomplished this effectively, and though at times we may be inclined to sneer at decadent European methods and customs, we must certainly bow our heads and blush with shame when we consider how completely the old World has left us behind in putting

into effect, not only the simple measures of common cleanliness that form so reliable a check to the spread of typhoid fever, but also so many other commonplace procedures that contribute so substantially to the comfort and health of the people.

The Status of Public Health and Hygiene in New York City is good, distinctly good, although as pointed out in a previous paragraph, in a few particulars there is a deplorable lack. But Rome was not built in a day and it takes time and the expenditure of much energy and brains in any sphere of human endeavor to evolve the perfect or ideal system. The truth of this was emphasized by a paper read at the Rochester convention by Mr. Philip S. Platt, Superintendent of the Bureau of Public Health and Hygiene of the New York Association for Improving the Conditions of the Poor, which dealt with the efficiency of the public and private clinics in New York City. Mr. Platt stated that during the year 1913, 1,250,000 individuals were treated in the 122 public and private dispensaries in New York City, and that while the precise cost of treating these patients could not be determined, it could nevertheless be proved that a large percentage of the cost was absolutely wasted. Continuing, he went on to say that when it is considered over 5,000 physicians are giving their valuable time, that a multitude of attendants, nurses and clerks are employed, that the three million odd prescriptions that were written represent the expenditure of hundreds of thousands of dollars for medicine, in addition to maintenance and operation, interest, and depreciation charges, the public has a right to inquire what results are being accomplished. If a bank, or an incorporated business were asked such a question,

the answer—and a comprehensive one—would be forthcoming at once, or something would happen. By dispensaries, however, these questions cannot be answered at all. This condition is due to a surprising lack of system in the clinics. Medical men as a class are notoriously bad business men, and it is, therefore, proverbial that charities directed by physicians are seldom if ever conducted on a sound business basis. As a matter of fact this is a condition that is met with in most charitable enterprises, and it is far from uncommon for charitable agencies to have the greater part of their income swallowed up by the cost of administration. In some quarters the existing state of affairs amounts to little less than a scandal. These conditions are all wrong, and if our clinics and dispensaries are going on they must be conducted in more business-like ways and much more attention paid to keeping systematic records. The people want to know how far these institutions are justifying their cost, and those in charge must be able to give information when it is called for. Promiscuous charity is frowned upon, and rightly so, but when a philanthropist has been induced to open his pocketbook to give to an organized charity, it is not calculated to soften his heart to find that the persons who will derive greatest benefit from his generosity are not the poor and deserving, but the members of the staff who take charge of his donation and attend to its distribution—or at least what is left to distribute after the expenses are deducted. *Il faut que nous changons tout cela.*

of ideas as generated by the adult, declares Arrowsmith. Their thought is unstable and incomplete because the association fibers in the brain are only in the process of development; in fact merely parts of an unfinished mechanism. A knowledge of this physical fact will throw light upon the state of mind which perpetrates the backward and unruly schoolboy. Gradually those interested in the study of child life and the evolution of the child mind are beginning to realize that many of our views as to education and training have been all wrong; that immature minds have too often been handicapped instead of benefited by the cramming methods that have characterized most of our school systems, especially in the lower grades. As a matter of fact, the education or training of the child demands great care in presenting demonstrable facts—the gradual development of concrete ideas until its mental mechanism is capable of drawing correct deductions. Theories should not engage the attention of the child; these will come at maturity without the aid of the pedagogue. If there is any one error that should be avoided in training young children, it is that of crowding their little immature brains with a mass of complex knowledge. A child is a little animal, and like other little animals the first few years of its life should be devoted to eating, sleeping and playing—in brief, laying the foundation for a strong healthy body. If a child is normal it will learn fast enough when the time for learning comes.

Child Psychology and Education.—Normal children are neurologically incapable of following the logical sequence

Chemotherapy—The Trend in Modern Therapeutics.—No careful student of present day researches in therapy can fail to note the growing interest in drugs of chemical origin. In spite of the great value

of vaccines, serums, organic products and the other agencies for combating disease it is evident that drugs still fill a most important place in the modern armamentarium. Chemotherapy, therefore, instead of being superseded by newer methods of treatment is not only holding its own but if the great interest being shown in drug investigations is any index, is more firmly entrenched than ever before.

To the majority of practitioners chemotherapy is a term of comparatively recent origin. While no doubt they have now and then encountered it in their medical reading it has probably failed to appeal to their interest because of the technical verbiage in which the subject has been enshrouded, and the fact that they have given so little thought to the nature and action of drugs. And yet there is no more fascinating field of study, none which more strongly grips the imagination, and none which promises to be so fruitful in practical results.

It is a fact, strange as it may seem, that years ago when clinicians first began to administer quinine in the treatment of malaria they were actually availing themselves of the principles of chemotherapy. But it required the genius of an Ehrlich, whose recent death has been an incalculable loss to medical science, to evolve a logical theory, and to demonstrate its soundness through animal experimentation and clinical observations of the human body.

It is most interesting to note that what first directed his attention to this subject was his discovery of the selective affinity of certain bacteria for some of the aniline dyes, especially methylene blue and eosin.

To Ehrlich's keen, inquiring, philosophical mind this affinity meant more than a mere staining reaction; it suggested therapeutic possibilities of vast significance. If,

he argued, certain micro-organisms show an avidity for certain aniline and coal-tar colors, might it not be possible to discover substances of this character which because of such attraction would exert a specific destructive action upon pathogenic organisms when administered to animals and human beings? In other words, it became his aim to find something that would directly attack the invading parasite without inflicting any damage to the tissues of its host. His first investigations on a large scale were made upon the protozoan of sleeping sickness, the trypanosoma. After numerous chemical experiments two colors, trypan blue and trypan red, were prepared which seemed to meet the requirements; but unfortunately a difficulty arose. While the vast majority of the trypanosomes in an infected animal could be destroyed, a number survived, and these, strange to say, developed a resistance against the very agent which had been so fatal to most of their ancestors—an immunity which greatly militated against the ultimate success of the treatment.

The wonderful "side-chain" theory, of which Ehrlich was the originator, enabled him, however, to pursue his researches on selective drug affinities, and from his observations he was led to assume that protozoal parasites presented several points of attack, and that by a bombardment with several parasitocides, a cross-fire, so to speak, they might be more effectively combated and eradicated. This, it seemed to him, could be accomplished by combinations of aniline and coal-tar dyes with arsenic, and finally after innumerable chemical experiments he found in atoxyl a more effective remedy than any previously tried. From the protozoan of sleeping sickness he

now turned his attention to the spirillum of relapsing fever, an organism belonging to the same group, and later to the spirocheta of syphilis, also a protozoal parasite. Working indefatigably along this line of chemotherapy his labors were at last crowned by the discovery of salvarsan, which though not an absolute specific against the spirocheta pallida approaches more closely to being one than the mercurial preparations.

This is only a brief and sketchy account of the beginnings of scientific chemotherapy as established by Ehrlich. But, as already mentioned, this method of treatment has long been practiced empirically by physicians—long indeed, before the causative factors of the diseases in which it was employed were known—as witness the use of quinine and arsenic in malaria and mercury in syphilis. In this connection, it is interesting to note that the old Donovan solution, which formerly was so largely employed in the later stages of syphilis, contains both mercury and arsenic, and therefore represents an immature embodiment of the present combined salvarsan and mercurial therapy. The modern evolution of chemotherapy, however, is far removed from empiricism and is based upon painstaking scientific research in biological and chemical laboratories. Therefore, progress must necessarily be slow and hampered by many disappointments, for often the promising results of the laboratory investigator are not confirmed by clinical tests. This is strikingly shown by the chemotherapy of cancer, in the study of which Ehrlich was actively engaged at the time of his death. When Wassermann published his experiments with eosin-selenium on malignant growths it seemed that we were at the dawn of a new era of treatment of

cancer. The theory on which its action is based is plausible—selenium is supposed to have a selective affinity for cancer cells and eosin serves as a carrier and fixator—but it lacks the substantiation of clinical evidence, and the same applies to the colloidal copper and silver treatment. In view of the fact, however, that the etiology of carcinoma is still involved in considerable obscurity, this must in itself prove a decided obstacle to the discovery of a specific.

The future alone can show whether the scope of chemotherapy will be broadened to the extent that has been predicted. To judge from the results thus far obtained, however, it would seem that we have hardly passed the threshold of achievement in this field of research.

"The study of chemotherapy," said Ehrlich, "offers the greatest possibilities in therapeutics today." Having in mind the noteworthy successes that have been achieved in the fields of vaccine and serum therapy, organotherapy and mechanotherapy, to say nothing of psychotherapy and the other methods of treating disease, we are not quite ready to accept this dictum of even so great a thinker as Ehrlich. There can be doubt, however, that chemistry aided by the phenomenal advances made in the study of physiology and physiologic chemistry has greatly added to our means of successfully coping with many diseases that only yesterday seemed all powerful.

It is a matter of special interest that the most promising recent discoveries have all been antiseptic or germicidal in their purpose and effect. Thus in respect to salvarsan. No extended reference need be made to this famous drug, but it was devised and worked out by Ehrlich to meet the need for a potent systemic antiseptic that would

effectively destroy the most difficult of all organisms to annihilate when once lodged in the body. What marvelous results this drug has accomplished are matters of common knowledge. Though not a specific as a systemic antiseptic and occasionally productive of serious results, salvarsan is a triumph for chemotherapy. Its place in medicine is well established and it is giving wonderful help in arresting both the immediate ravages and remote consequences of one of the most fearful of human diseases.

Another drug of more recent discovery but one that seems to hold great possibilities, is that which we had occasion to refer to last September, as evolved by J. T. Ainslie Walker, the distinguished English chemist, who with Dr. Samuel Rideal, another English scientist, has given the scientific world the Rideal-Walker test for antiseptics. This new drug, which Walker has discovered, has been under critical clinical investigation by disinterested observers for many months. These investigations seem to justify the early expectations that this drug which is trimethylmethoxyphenol, (a simpler name will be given it for convenience, just as salvarsan was chosen to serve in the place of 'dioxy-diaminoarsenobenzol') will be of remarkable value as an intestinal bactericide. Experiments of an exhaustive and painstaking character indicate that this product is a most potent germicide with a Rideal-Walker coefficient of 40. Introduced into the intestinal canal it is forty times more potent as a destroyer of germs than a five per cent. of pure carbolic acid would be. Germicidal potency is the fundamental quality essential in an intestinal antiseptic, but what gives this new drug its exceptional value is its non-toxicity and the

further fact that it is non-absorbable, passing through the canal without undergoing the slightest change. It is still too early to make any dogmatic statements in regard to the utility of this new drug as an intestinal germicide. It is certainly most promising, some remarkable results have been achieved with it, and it has certain qualities that no other drug possesses. Non-toxic and non-absorbable, no satisfactory explanation has thus far been found to account for its great germicidal action. This can be safely left for further research. The important question is, will this drug do all that it is hoped it will? Time and the test of clinical use under all conditions will alone tell. If it does "make good," as there is every reason to anticipate, its value will be almost unlimited. With the intestinal canal playing the part it does in the causation of so many diseases, the great need has been for an intestinal bactericide that would disinfect the canal and its contents, without the slightest toxic action. This need seems to be met by this new chemical product, and if this is established, another triumph for chemotherapy will be recorded.

Recent reports from the hospitals of France further attest to the important place chemotherapy is filling in wound treatment. Carrel has just announced some very gratifying results with a solution in which the chloride of calcium is an active ingredient. Still later, Kenneth Taylor reports that he has been able to control one of the most serious infections army surgeons are encountering, gas gangrene, and this with quinine.

Exceptional interest is attached to this report by Taylor on the conquest of gas gangrene with quinine. A few medical men have long known that quinine, particularly

the bisulphate, was a potent antiseptic. The great majority however, have been totally oblivious to the important fact that this widely employed drug is one of the most useful, effective and non-toxic germicides at the command of the profession. Nearly eight years ago, as a result of the Rideal-Walker test, quinine bisulphate was shown to have a carbolic coefficient of 3.1! A drug with such disinfecting powers and so free from irritating and toxic action surely ought to have a wide field of utility. Very little gas gangrene is encountered in this country, but there are many other opportunities for the use of a drug having the qualities of quinine bisulphate and it is more than probable that it will be found exceedingly valuable in many conditions that it would never have been used in but for Taylor's noteworthy investigations.

As stated therefore, chemotherapy has been mainly concerned for some time with searches for safe and effective antiseptics, germicides and disinfectants, agents capable of killing the invading germs without injuring or inconveniencing the invaded tissues or body. To be sure, earlier studies brought many drugs into use that have been capable of influencing the various functions and processes of the body. These have all possessed more or less efficiency and some have been exceedingly useful. With all that has been accomplished however, the fact still remains that no branches of medicine have been so sadly neglected as pharmacology and therapeutics.

It is to be regretted that all this is true and that practically no provisions have been made in this country for just such work as Ehrlich devoted his life to. Some of our great institutions are doing a little work in therapeutic research, but what is needed is an institution like the George Speyer House

for Experimental Chemotherapy which Ehrlich directed. It would take a large sum of money no doubt, but we know of no way some of our philanthropists could do more for the world at large than to establish an institution for experimental therapeutic research. The discovery of one drug like salvarsan, or the intestinal germicide we have mentioned, would mean more to humanity than the mind can grasp. What returns such an investment would bring! Not in money, but in better, more definite results in the conflict with disease, in quicker relief from discomfort and distress, in prompter recoveries; in brief, in all the manifold advantages that would accrue to the human family from increasing ever so little our "mastery over disease!"

The administration of the narcotic laws continues to cause more or less annoyance to a good many individuals, but the medical profession are getting well enough adjusted to the regulations to be able to reduce to a minimum the confusion that was so general in the beginning.

Much satisfaction has followed the announcement that a large sum of money had been provided by a noble hearted woman for the establishment of an institution in New York to which drug habitués can be sent and receive appropriate treatment and care. This is gratifying to all who realize how necessary it is from a humane standpoint to make proper provisions for those who are the victims of narcotic drugs.

It is regrettable, however, that it should be necessary for private resources to come forward and undertake this work. In attempting to correct the drug evil and solve the problems, the state and national govern-

ments should have done their full duty. Instead of saying only "thou must not" and "thou shall not," the law makers should have taken counsel of those who understood the problem, and furnished proper means for looking after the unfortunates who come under the law's restrictions and regulations. Failure to provide such means is a burning shame and until our anti-narcotic laws take cognizance of this defect, they will stand as a reproach to the humanity and sound judgment of our law makers. Drug addiction is not a crime, but a disease, and like any other sick one, the drug addict needs sympathy, proper treatment and intelligent care.

The medical inspection of school children is becoming one of the most important phases of the work of the sanitarian, and rightly so. Under no other circumstances can "public health work" accomplish more definite and tangible results. The prompt discovery and consequent rectification, of disease, actual and potential, gives the child a far better prospect for a successful schooling, as well as a more useful place in society when its school days are over.

Prevention is invariably better than attempts to cure—to modify the old saw.

In New York City the Department of Health now requires a physical examination of every child attending the public schools. Since there is near a million of them, it will be clear that the health authorities have taken upon themselves a huge job. They are to be congratulated upon their leadership and the avidity with which they are attacking and accomplishing their task.

As usual "the rights of the people are

being trodden upon" and "this is an unwarranted usurpation of individual rights and privileges"—according to some who seem to have the unfortunate habit of criticizing good things because of their personal opinions of those fathering them, or, maybe, merely because "the other fellow thought of it first!"

There is no need for materialization of the trouble that has been anticipated by some, or for the worry by others that the inspectors may "do more harm than good." Without a question an immense amount of good must accrue to all concerned, for a careful study of each child in school, or out of it, cannot but reflect favorably upon its own health and upon the health of its prospective schoolmates by preventing their contracting any infectious disease that otherwise would be allowed to be at large. This is by no means all, for the advantage is fully as marked upon the economics of the family first, and later the community.

One can assume at least one reason for the antagonistic position of some laymen—they do not know any better; but we confess to a feeling of surprise mingled with disgust that any members of the medical profession should oppose so valuable an innovation. As well might one decry the excellent work of the immigration inspectors at Ellis Island and speak of the "rights" of the unfortunates who are refused admission to this country, as to throw opprobrium on this, the most important advance in school hygiene and municipal health preservation. For after all is not its value to the city as great as immigration inspection is to the country?

We predict a much wider application of this principle, with economic advantages that can never begin to be accurately measured.



A Prince of the Medical World Has Passed Away.

—Paul Ehrlich, the Director of the Royal Institute for Experimental Therapy and of the George Speyer House for Experimental Chemotherapy at Frankfurt-on-the-Main died suddenly August 20th. Ehrlich was probably the most profound and ingenious thinker in the field of medicine of the present era. Like so many leaders of scientific medical research in Germany, the deceased investigator was a Jew. He was born in 1854 in Strehlen in Silesia, educated at the University of Breslau and graduated in medicine at Strasburg. Skilled as he was in pathology, Ehrlich was first of all a chemist and from the outset of his career paid particular attention to the action of chemical substances on living bodies. He will be chiefly remembered, and his claim to fame will probably mainly rest on his investigations regarding the specific action of dyes on living tissues, which led to his famous "side-chain" theory, and for the discovery of salvarsan. Although imbued to a remarkable extent with the scientific spirit, Ehrlich like so many others of his wonderful race, was both practical and utilitarian; thus his most theoretical and imaginative work was frequently employed merely as a stepping stone to more practical studies and research. His modes of investigation and experimentation were highly successful and it was because he was able to enlist all the faculties of his mind and build up as he went along that he accomplished so much of a tangible character in the field of scientific research. As a usual thing, the worth and achievements of many men are not recognized until they are dead, but this was not the case with Ehrlich, for he received much credit and won much renown during his lifetime. Now that he has passed away, we can view his work in better perspective, and although it may be somewhat premature to place him as yet, there is every reason to believe that the scientific world will class

him in the same category as Pasteur, Lister and Koch.

To review in detail the life work of a man whose industry was so great and whose accomplishments were so many, would be impossible in an article of much greater latitude and scope than this one; therefore in this essentially brief reference to his work, only his best known investigations and discoveries will be referred to. The "side-chain" theory first brought him worldwide recognition and notwithstanding the fact that this theory does not fully explain all the principles of immunity, it at least demonstrated that many of the phenomena of infection and immunity are more or less the result of chemical processes. By this theory a long step in the direction of solving the problems of infection and immunity was made. At any rate, the theory has formed a most useful working hypothesis upon which have been based many investigations of far-reaching importance to pharmacology and therapeutics. The facts to be gathered from a consideration of the "side-chain" theory certainly go to show that the many processes incidental to cellular activity are caused by chemical reactions, even if they do not explain the entire mechanism of immunity. The "side-chain" theory has become classical and many are of the opinion that Ehrlich's reputation has a more solid and substantial foundation in his researches in this direction than upon the more dazzling and apparently practical discovery of salvarsan.

It was the introduction of salvarsan, however, that served to bring Ehrlich's name before the public. Any drug which held real promise of rapidly overcoming the scourge of syphilis was certain to receive the instant attention of the intelligent laity, as well as the medical profession. It meant too much to the world to remain in obscurity. Moreover, it was a legitimate discovery, the outcome of a well thought out and carefully conducted series of investigations. Starting from the principles of the "side-chain" theory, Ehrlich began an investigation of a cure or remedy for syphilis. His object was to find a substance which would utterly destroy all the spirochetæ pallidæ in the human organism. His initial starting point was that arsenic had been successfully employed in the treatment of syphilis and his design was to procure a

substance, which while causing as little injury as possible to the human body, should at the same time act powerfully in destroying the invading organism. After long and painstaking work by chemists under his direction, there was finally evolved "606," dioxidiaminoarsenobenzol, or as the substance was ultimately termed, salvarsan. This product was found to exert a very potent effect on the syphilitic organism, and that this effect is uniform and definite has been confirmed by clinical experience. Salvarsan was not perfect, however, and since it had certain defects, Ehrlich brought out neosalvarsan, which in many features is superior to the original substance. Still he was not content—nothing less than perfection would satisfy him—and he continued to seek for a substance which would perform complete sterilization without injury to the body. At the time of his death he was actively pursuing his studies in this direction, and though not completed in the sense that he had achieved the result he was seeking, he nevertheless has paved a way which others can follow with every certainty of ultimate success. Many and various were Ehrlich's other studies, among which his truly remarkable work upon the standardization of diphtheria antitoxin, should not fail of mention.

Science knows no boundaries or countries, and Ehrlich although born in Germany, belonged to the world. His achievements, undoubtedly, redounded to the honor of the country in which he was born, but he has done so much for all humanity that all countries whether at war or not, can weep with Germany over the loss of one of the greatest medical investigators the world has produced.

Ehrlich was married and leaves two daughters, both of whom are married to German scientific men of prominence.

The phenomena associated with advancing years have long been interesting, from pathologic as well as from psychologic standpoints. It has only been recently, however, that it has been definitely realized that the process of growing old is attended by certain physiologic changes and modifications of the metabo-

lism which must be carefully considered if the future health of the individual is to be conserved.

The usual conception of age and youth is derived from a consideration of such processes as they occur in man and the higher animals. This view, in the main, is correct, but as pointed out by Professor Charles Manning Child in his notable work on "Senescence and Rejuvenescence" just published, a full consideration of the facts leads unmistakably to the conclusion that the age cycle after all is simply one aspect of the developmental cycle, which is invariably undergone by every living organism, from the simplest to the most complex. Senescence and rejuvenescence are not in themselves special or distinct processes; on the contrary they are merely certain aspects of the relations between the metabolic reactions and the protoplasm substratum. The progressive changes with which physiological senescence is associated are changes in the direction of greater physiological stability of the protoplasm and decreased dynamic activity. Senescence occurs chiefly during the vegetative period of the individual, while rejuvenescence is usually associated with reproduction.

Senescence is a characteristic and necessary feature of life and occurs in all organisms, but in many of the lower forms it may be more or less completely balanced by rejuvenescence in connection with reproduction or other regressive changes, so that there is little or no progressive senescence from one generation to another, or in the case of colonial forms, such as multi-axial plants, of the colony as a whole. In short, senescence as conceived by the author is "a decrease in rate of dynamic processes conditioned by the accumulation, differentiation and other associated changes of the material of the colloid substratum," or as he sums up the whole subject, "the age changes in the organism are merely one aspect of *Werden* and *Vergehen*, the becoming and passing away which make up the history of the universe."

Professor Child has given to the scientific world one of the most interesting discussions of this fascinating subject, that has ever been published. At first blush, one

might fear that any consideration of so complex a question must be dry and prosaic, if not difficult of comprehension. No person, however, who has any familiarity with biology, or scholarly training whatsoever will find it so. In fact, the great importance of the subject, and the prominence it is bound to assume, not only to the earnest practitioner of medicine, but to every intelligent layman, as the changes and conditions associated with the onset and progress of senescence are recognized and rightly interpreted, have been responsible for the foregoing remarks. Surely no one can read this splendid book Professor Child has evolved from a lifetime of study and research, without feeling deeply grateful for the erudition, scientific devotion and literary talents that have made such a work possible. Medical men cannot fail to receive great help from this treatise, for in defining explaining and classifying the processes incidental to aging or senescence, a wealth of material is provided that should prove of inestimable value in studying and investigating the pathologic conditions occurring in the aged. The notable increase of cases of sudden death, as well as the more frequent occurrence of affections of the heart, blood-vessels and kidneys, usually associated with senile changes, make the study of senescence one of the most imperative for physicians today. There can be no question but that our ways of living have a vital bearing on the existing conditions. In order, however, to understand and properly gauge the factors involved, medical men owe it to themselves to acquire without delay full and comprehensive knowledge of the organism and the varied conditions produced by the physico-chemical changes of senescence. With such knowledge, the capable physician will surely be able to do more for those who are feeling the effects of "Time's rapid passing."

That the conditions resulting from senescence deserve the most earnest attention at the hands of the medical profession can hardly be denied, for the number of men and women who are being snatched away, almost before "the noon day of life" is passed, is rapidly becoming a serious reflection on the manner of living in our most prosperous and cultured communities. Surely if any members of a com-

munity deserve conservation, it is those who have passed the age of forty; the reasons are obvious. It is because of our sincere conviction that no obligation of graver moment confronts us today than to learn the reason for the sudden loss of so many men in the prime of life, that we are so ready to commend Professor Child's contribution to the subject of senescence. He has delved deeply into the intricate phenomena associated with growth and the dynamic changes of living organisms, and laid a splendid foundation for deductions and conclusions of far-reaching importance to medical science.

The "Gastric Price" of Success.—In the effort to achieve fame and fortune—the material evidences of success—men all too often neglect two factors of prime importance in the development of human happiness, their bodily health and their mental equilibrium.

As a consequence when they reach the harvest time of life—if their strenuous manner of living permits then to reach that far—and they are ready to reap the fruits of their labors, they find themselves broken and worn, with functions all deranged, nervous systems depressed, and old age prematurely at hand; the capacity to enjoy the simpler joys of life is gone, and like those who have come from some far off, strange land, they are alien to their surroundings. Success measured in terms of fame and fortune, is an empty asset when its price in gastric weakness, neurasthenia, metabolic derangement, hardened arteries, and mental unrest is considered.

Dr. M. O. Burke, (*Charlotte Med. Jour.*, Aug., 1915) refers to this price, that so many successful men are forced to pay at the zenith of their activities as "the gastric penalty of success."

In discussing the course too often pursued by the ambitious man, Dr. Burke points out that a business career may be divided into the following stages:

1. Preparation or apprenticeship.
2. Establishing a business.
3. Building up a reputation.
4. Keeping up his reputation.
5. Gathering the fruits of his labor.

"During the first or preparatory stage" says Dr. Burke, "the professional man spends three to five years in college. While his work is arduous it is well regulated and he has the intervals between periods to relax.

There he has the monotony broken and is stimulated by the association of his fellow students. He generally lives at a college boarding house which means cheap food and bad cooking. His great drawback is in overtaking the digestive functions in the form of fried foods, coffee and too much sweets, rapid eating and returning to work immediately after meals. College indigestion is generally hyperchlorhydria, intestinal fermentation and constipation: these, of course, affect the kidneys, liver and heart.

The second stage, means hard work, constant attention, self-sacrifice, patience and economy. During this period man neglects his physical comfort and in most instances pays but little attention to his food.

He eats when he can find time and such food as is most easily obtained. If the quality will keep up the physical fires he is content. It is during this period that he lays the foundation for most any acute or chronic disease that may be passing.

If he is so fortunate as to live through the second period he then begins even a more strenuous life, that of increasing his work, making it better and bigger, of entertaining and being entertained. He realizes that the most effectual advertising is in satisfied customers. This means people who are not only satisfied with the products of his factory, business or profession, but who are satisfied with the man and the methods behind the work.

The faculty of making friends and acquaintances is of no little importance. The mental strain, the midnight feasts, the frequent julep and the constant cigar or cigarette lose no opportunity to work their harm. It is during this period that his waistline increases, his neck grows larger, and the shoes are fastened with more effort.

His sleep is broken and he does not rise refreshed in the morning. There is a sensation of discomfort after eating often amounting to pain, the appetite flags and the weight and strength decrease.

The lips and finger tips at times become

purple. The feet become heavy and breathing is labored. The pulse is resistant and the dizziness is frequent.

He becomes somewhat alarmed at his condition and though he starts out on the fourth stage handicapped physically and mentally, he may have builded so well and so wisely that his reputation can be kept up by others he directs. The professional man, however, usually has to struggle on to the end or fall in the fight.

We find many who fail to live to see the harvest ready to garner, while too many of those who do, spend much of the fruits of their labor not as they had expected and hoped to, but in pursuit of physical relief from the effects of neglect during the early stages of their careers.

Occasionally we find a man who by prudence in supplying his body with proper food, fresh air, exercise and rest is able when he lays aside the harness to enjoy the fruits of his labor.

Such is the exception, however, and instead we find the health resorts filled with men who have won fame and fortune but who are now paying 'the gastric price of success.'"

Immunity in Tuberculosis.—Edward R. Baldwin, *New York Medical Journal*, January 23, 1915, summarizes a very interesting article on Immunity in Tuberculosis as follows: We have seen that there is no natural immunity to tuberculosis in man or other mammal; that there is no true immunity of races; that inheritance tends rather to an increased susceptibility than to an increased resistance; that long continued non-exposure of a race to infection increases the susceptibility of that race, while abundant exposure for many generations leads to a marked increase in the frequency of acquired relative immunity; that the mild infections of human beings in early life constitute the most powerful means of relative protection in adult life. From this latter fact we may conclude that in the future there should be a continued decrease of the severer cases of tuberculosis in man, accompanied, probably, by an increase in the frequency of the cases of mild and minor infections.



Birth Mortality, with the Presentation of Some Practical Helps in the Prevention and Treatment of Asphyxia Neonatorum.*

BY

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If it is true, as stated by DeLee, that "the highest mortality that befalls the human race on one day, occurs on the way of birth," then the obstetrician has an opportunity and a duty in the field of preventive treatment, that is scarcely equalled by any other speciality in his profession. It has been estimated that more than one hundred thousand infants die annually in the United States during the process of birth, or as a direct result of this process. When to this frightful infant mortality, we add the well-nigh incalculable maternal morbidity known to accompany and result from these births, then I am sure we are safe in saying, that the domain of practical obstetrics offers one of the largest and most *urgently needful* fields in all the realm of preventive medicine. It is difficult or impossible to obtain accurate figures as to birth mortality. The area of

registration included in the latest Mortality Bulletin of the United States Census Bureau, represents only about 65 per cent. of the entire population, so that any statistics we obtain here, can only help us to an approximate estimate of the total infant mortality. In the first place this bulletin contains no record of still-births, and we are obliged to look elsewhere for data on this subject. I am indebted to Dr. Frederick V. Beitler, chief of the Maryland Bureau of Vital Statistics, for a copy of his paper on "Still-Born Children," which is one of the most interesting discussions of the subject I have yet seen. As shown in this paper, there is no kindred subject so absolutely hopeless as to reliable statistics, as this one of still-births. Chiefly because the medical profession, and the laws of this and other countries, have no commonly accepted definition of the term "still-born child."

Dr. Beitler, after studying the subject in all its relations, deducts the following definition: "A still-born child means any product of human gestation which can be recognized as such, which after birth (complete delivery of the entire child, but not necessarily the cord or after-birth) does not breathe." On the basis of this definition, Dr. Franklin P. Mall of Johns Hopkins, who is especially qualified to speak on the subject, estimates that the number of still-births is at least *one-half* the total number of live births. That is, for every 1,000 live

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born children, there are at *least* 500 born *dead*. This is a rather startling statement, but is no doubt true, in the light of the definition just given. That this definition, however, is far more comprehensive than that usually accepted, is shown by the fact that available statistics from various localities at home and abroad, give the estimated number of still-births at from 4 per cent. to 9 per cent. of the total number of births. For instance, in Paris, it is given as 9 per cent., in various other European cities at from 5 five per cent. to 7 per cent., in New York at 7 per cent. or 8 per cent., in Chicago 5 per cent., and in Philadelphia about $4\frac{1}{2}$ per cent. Assuming 5 per cent. to be a fairly accurate estimate for the entire country, the total number of still-births, (as that term is usually accepted) calculated on the estimated birth-rate of the country, would be close to 140,000 annually. From the tables of infant mortality, exclusive of still-births, we find that approximately 230,000 infants die annually in the United States, in the *first year* of life. More than 25 per cent. of these (U. S. Census Bulletin) die in the first week, and more than 42 per cent. in the first month.

Our experience alone, even if we had no statistics, would tell us that a very large part of this first month mortality is due, either directly or indirectly, to intra-partum causes, and a very much *larger* part of the *first week* mortality. The number of deaths for the entire country for the *first week* is approximately 60,000 annually. Suppose, in order to be entirely conservative, we estimate that only *half* of this number is due to the process of birth. And suppose that only one-half of the estimated number of still-births, (and we have reason to believe that this is fairly accurate) can be directly charged to intra-partum

causes. This would give us at once 100,000 as a very conservative estimate of the annual birth mortality. Or, calculating on the basis of the *first month* mortality, which, according to the Census Bulletin above quoted, is approximately 97,000 annually, we get practically the same results. Dr. Beitler, above quoted, estimates that close to 50 per cent. of the *first month* mortality is due to prenatal influences, such as congenital debility, malformations etc.,—which are in no way related to the process of birth. This would leave over 48,000 deaths to be accounted for by intra-partum and post-partum causes. We find that about 17,000 deaths in the first month are assigned to the various diseases of infancy, most of which were contracted after birth. Deducting this 17,000 from the 48,000, and we get 31,000, which may be considered a fairly accurate estimate of the *first month* mortality that must be attributed directly to intra-partum causes. Adding this to the 70,000 still-births due to the same causes, and we have again more than 100,000 birth mortality, which is certainly an *appallingly large* annual death toll to be exacted by a function that is supposed to be physiological and normal. But this is not all. These tens of thousands of dead infants constitute something *tangible*, that can be measured in the figures of mortality tables, but who can estimate the results of all the mental and physical defects of later life, that may come to *thousands more* who barely *escape the death of birth*? Such statements as these, which are by no means an exaggeration of existing conditions, give the conscientious physician something to think about. Are the conditions responsible for this high birth mortality growing *better* or *worse*? And what part have *we*, as individuals, in determining the answer to this

question? *Maternal* mortality, in child-birth, is certainly *lower* than it was a generation or two ago, but I am *not* so sure that this is true of *infant* mortality. Some one has raised the question as to whether we may not have been in a measure *negligent* of the best interest of the *child*, in our zeal to safeguard the *mother*. Whatever the explanation, it *does* appear to be true that the ratio of *child* mortality to *maternal* mortality is disproportionately and unnecessarily high. With the number of cases of dystocia growing relatively larger from year to year; with the notably increasing tendency to interfere in labor, either from apparent necessity, or from passing fads in practice,—as illustrated lately in the widespread use of pituitary extract and the so-called “dammerschlaff drugs”—the number of still-born babies, or of babies more or less gravely *asphyxiated* is undoubtedly increasing.

It is evident, therefore, that *two* of the most *important* problems in the conduct of labor, are (1) *the intra-partum study of the condition of the child*, and (2) *the successful resuscitation of the new-born*. It is far better, of course, to so study conditions both in mother and child, and to so conduct the *labor*, that the *child* may be saved, if possible, from the *dangers of asphyxiation*, than it is to *subject* it to such dangers, and then take the chances on its successful resuscitation. Much could be said at this point, on the several different causes of birth mortality, and of the necessity on the part of the physician, for diagnostic and operative skill sufficient to meet the problems that accompany these various causes, but such discussion is not the object of this paper. My chief concern at present is with *asphyxia*, which, however produced, is re-

sponsible for more infant deaths than all other causes combined.

There is but one practical way of knowing and keeping track of the condition of the child before its birth, and that is by closely observing its heart-sounds. To be able to do this *well*, is one of the important qualifications of the physician that *all too frequently* has been neglected. The ability to hear the fetal heart with ease, and to recognize changes in its quality and rate, is not well mastered by many physicians, because they seldom or never *listen* to the heart sounds, in the majority of cases attended by them. The failure to qualify in this particular direction would not be so *serious* a matter, if labor were always what most men erroneously *assume* that it is,—a normal or physiological process. Then the child's life would not be *threatened* in birth, and there would be no *reason*, except in rare instances, for ever wanting to *hear* the fetal heart. Unfortunately such is not the case. We cannot be assured before hand, that *any* labor will be normal and free from danger to the child; and the cases of prolonged or *difficult* labors, or of labors with some decided departure from normal, are becoming so very frequent, under the influences of modern economic and social life, that many authorities now look upon the so-called *normal* labor as the *exception*, instead of the *rule*. It therefore follows that every obstetric attendant should thoroughly train himself in the ability to *hear* and *interpret* the fetal heart in the various stages and conditions of labor. While this careful oversight of the child's condition is advisable in every case that is at *all* prolonged or *difficult*, it becomes an absolute *necessity* when the course of labor is interfered with either instrumentally, or by the use of some of the drugs

now so *widely*, if not so *wisely* used in obstetric practice. One who would give a general anesthetic, or who would employ pituitrin, morphin and scoplamin, or *any* drug capable of profoundly effecting the mother, or influencing the course of labor, without watching the effects on the *child*, just as carefully as he would watch the *mother*, would *certainly* be censurable for neglect of *duty*, if *not* for adding to the sum total of *birth mortality*. Numerous instances might be cited in which the early detection of signs of danger to the child has been the indication for action that has saved it from *grave asphyxia* if not from *death*, but this also is a part of the discussion on which it is not my purpose to dwell. It is presumed that one who has taken time and interest enough in obstetrics to qualify in the art of watching the uterine action, and its effects on the unborn child will be *wise* enough to know what to do when a condition of danger is detected. It is not *every* one, however, who has sufficiently qualified in this direction. I have seen nurses and midwives a great deal more proficient in watching the heart-sounds, than many physicians are, after long years in practice. Chiefly because the *former* trained themselves by listening in every case they *handled*, while the *latter* rarely or never listened at all.

The *method* of auscultation is largely a matter of personal choice and training. One person may be entirely proficient in the use of the stethoscope, while another can hear nothing, except by immediate application of the ear. It is all a matter of training. While it would make little or no difference what method was adopted in observing the fetal heart *prior* to labor, *in* labor it *does* make a difference and therefore it is better to practice that method *all* the time, that has

been found to be best at the time of *labor*,—namely, the *stethoscope* method. With the patient in the various positions in which it may be necessary to place her, or with the drapery of the obstetric sheet about her, the direct application of the ear to the abdomen, becomes a very inconvenient, if not altogether *objectionable* procedure. One is almost *compelled*, therefore, to use some form of stethoscope. The more or less cumbersome, but quite *efficient* binaural instrument so generally in use, would serve the obstetrician very well, were it not for the inability to satisfactorily *sterilize* and *handle* such an instrument.

A labor stethoscope, to be entirely serviceable, must not only be *simple* and easily *handled*, but must be *sterilizable*. A non-sterile instrument, of course, could not be safely used after the physician had donned his gloves, or after the patient had been prepared in sterile sheet or towels, and yet *frequently* this is the *very time* when auscultation is most urgently indicated. True, the larger binaural stethoscope could be made so as to stand boiling with the other instruments, but even *then*, it would not be as *practical*, in my opinion, as the simple *monaural* type which I wish to show you. This instrument (Fig. 1) is made after the model of the *wooden* stethoscope so much in vogue in the German maternities. I failed to find anything of this type in our *own* shops, and therefore had this one made with a view to supplying the need. As you see, it is a simple one-piece metallic cone, about two inches in diameter at the base, so as to easily comprehend the fetal heart area, and one-half inch in diameter, with an ear disc, at the top, so as to readily transmit the sounds. I have found this to be a very satisfactory little stethoscope, and to me, an obstetric aid of such practical

value, that I would not now be without it. In the past year several of my obstetric friends have also testified as to its usefulness in their work. But whether *this*, or some other equally serviceable instrument is adopted, or whether the doctor prefers to use no artificial help at *all*, my plea is



FIG. 1. A serviceable Labor Stethoscope.

Now to the question of the proper *treatment* of the asphyxiated new-born. This is also a subject, I am persuaded, that is more or less neglected by most men doing obstetric work. It will be noticed, I do not say by "*most obstetricians*." There is a difference in the two expressions. Most men doing obstetric work, do it under *protest*, and are *not obstetricians*, except in so far as they find it necessary to do obstetric work, in order to *get* and *hold* the family practice. Many of what might be called the *secondary*, though none the less *important* problems connected with the work, therefore, are much neglected. No one is apt to be greatly interested in anything but the *absolute essentials* of a line of practice pursued largely as a disagreeable expedient.

To know what is best to do for a case of asphyxia neonatorum, it is advisable to know something of its cause, and of the type or grade of asphyxia to which it belongs. The most frequent of all causes is some interference with the fetal circulation. Anything that will cut off, or greatly diminish the supply of oxygen to the child for any appreciable length of time, will, of course, jeopardize its life. Compression of the cord, or placental sinuses by excessive uterine contractions, *too* frequent, and *too* prolonged, is no doubt responsible for a larger percentage of cases, than is generally recognized. The relative positions of the placenta and cord and child, undoubtedly prove a factor here; compressions of the cord from any one of a number of different causes, such as prolapse, either in the uterus, or into the vagina; entanglements about the child's parts, or abnormalities in length; I recently had a case of fatal asphyxia occurring a week before the child was born, in which the most *probable cause* was a cord 54 inches long. Temporary, if

that he shall try to *prevent dangerous asphyxia*, by watching more carefully and more constantly, the *fetal heart* during the course of labor, and my *belief* is, that a suitable *stethoscope*, always at hand with the other instruments, will greatly encourage his efforts in this direction.

not, fatal anaërosis rather frequently occurs before labor sets in, as the finding of old meconium in the liquor amnii would indicate. In another case recently, I had great difficulty to resuscitate the child, where the cord, prolapsed about the neck, had been unwittingly caught with the forceps. Excessive, or violent *contractions* may also produce partial *separation*, as well as *compression* of the placenta. Besides these *direct* disturbances to the circulation, the child may become asphyxiated from pressure on its *brain*, either from *without*, as by the use of forceps, or from *within*, by hemorrhage from the traumatism of severe labor. A few days ago I saw in consultation, a child that was resuscitated with the *greatest difficulty*, only to develop grave cerebral disturbances a day or two *later*, and *apparently* from no *other cause* than that of allowing the head to remain on the perineum through several hours of hard labor, without watching the *heart-sounds* for signs of danger. In such cases the conduct of labor involves not *only* the question of saving the child's *life*, but the more *important* one, perhaps, of determining its future *mental* condition. Anesthetics, morphin, and other narcotics endanger the child either by interfering with its oxygen supply, or by direct poisoning. Practically the same is true of such drugs as pituitrin and ergot. The excessive contractions produced by pituitary extract, and the compressions of the cord or placenta resulting therefrom, are its *chief* dangers, but it also has a direct effect on the child, that may sometimes prove fatal. So much for a brief summary of the causes.

As to the *kinds* or *grades* of asphyxia, it is merely a matter of *degree*,—of the length of time the child has been deprived of its oxygen. If the time has been comparative-

ly *short*, or the circulation but *partially* obstructed, then we have the so-called "blue" asphyxia. The skin is congested and purple, the body is firm, the reflexes are present, and the heart beat, or *cord pulsation* is good, but the child fails for a time, to breathe. If the obstruction has been *complete*, or has extended over any considerable time, then there is a deathly palor, the reflexes are absent, the *body* is relaxed and *flabby*, and there is no pulsation in the cord, with perhaps but a very feeble heart action remaining. This is the "white" asphyxia, or asphyxia pallida, and is the type in which most deaths occur. Not *every* case, of course, can be easily placed in one or the other of these two distinct classes, for the degree of anaërosis may be anywhere between the two extremes. What would ordinarily be a *mild* case, is sometimes allowed to run into the *graver* type, by the failure to properly meet the condition as soon as it is discovered. In the "blue" asphyxia, very little is required to be done, if that little be the *right thing* at the *right time*. So long as the child is rigid and cyanotic, there should be no cause for excitement, or for doing a *lot* of the things that are often done under such circumstances. It is quite probable, I think, that many of the efforts at resuscitation, in such cases, are not only *useless* and *uncalled* for, but are of the roughhouse type that is positively *harmful*. I am *quite sure* I have *often* seen such strenuous *tossing* and *swinging* and *slapping* and prolonged exposure in hot and cold water, or viciously cold air, that if the child *did* survive, it was in *spite* of such treatment, and not the *result* of it.

Among the many impressions obtained from a summer's sojourn in European maternity hospitals, I think none remain more *clearly* or more *favorably* fixed in my

mind, than the very *definite, systematic* and *effective* methods that were employed to safeguard the child, in the great *Frauenklinik* of Vienna. Not only were the child's heart-sounds watched carefully throughout the course of labor, and the conduct of labor determined largely by this watching, but *efficient* and *well ordered means* were constantly at hand for taking care of the asphyxiated new-born. There was a notable absence of all the *flurry* and *excitement* and haphazard efforts at resuscitation so frequently seen. On a table extending across the large delivery room, in which there were often as many as ten or fifteen women in labor at once, was arranged in orderly manner, all that might be needed in the immediate care of the new-born child, and

cold water, or alternately in both, is *another* questionable procedure that I have entirely abandoned. None but the *graver* cases *need* such treatment, and on these I prefer to use more effective measures, that are not accompanied with so much exposure and shock. Mouth to mouth insufflation, while by no means a *harmless* or ideal method, is perhaps the most *effective one* that can be employed on severe cases, in the absence of the suitable *mechanical* aids, which I now believe it to be the duty of every obstetrician to employ. However, it was no part of my purpose, when I began this paper, to discuss at length, or to pass judgment on the many different *methods* and *devices* that have been proposed from time to time, for the treatment of asphyxia

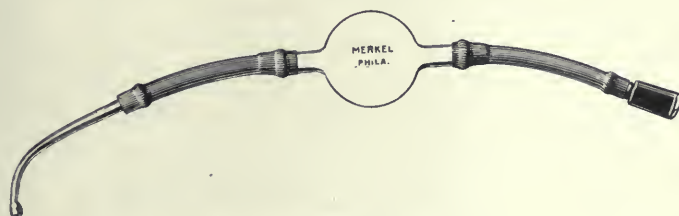


FIG. 2. Mucous Aspirator.

to me it was an intensely interesting object lesson, to see the *methodical* and *efficient* manner in which this part of the lying-in work was carried out. I *know* that *my own* work and results have been better for having seen it. Since that time, I have found little or no use for most of the time-honored methods commonly taught and practiced for the resuscitation of the child. So far as *my own* experience goes, I would be perfectly willing to *forget* the methods of Sylvester, Schultze, Byrd-Dew, Laborde, and *all* of their kind, for I am *convinced* that the attempt to *employ* such procedures, in most instances, is a *useless waste of time*, if not a *menace* to the welfare of the child. Submerging the new-born in hot or

neonatorum. I fully realize the futility of such an attempt. *None* of the methods, nor *all* of them together, have been *entirely* satisfactory, or we would not *have* so many, and *still* so large a percentage of failures. Each individual gets the best results from that method or means in which he has had the most *experience*, and he is *not* apt to be greatly influenced by the abstract opinions of *another*.

I shall therefore conclude by presenting the apparatus, and the simple procedures which have given me best results, and which, though not ideal, have proven so much more *satisfactory* than any I *formerly* employed, or, than those I *still* see employed by most men doing obstetric work,

that I feel justified in recommending them to the favorable consideration of others. In my instrument tray, ready to be sterilized with the other necessary labor instruments. I always carry, not *only* the little Americanized German stethoscope just described, but *another* equally indispensable help, which I learned to use routinely, in

measures for resuscitation absolutely *unnecessary*. It is a very simple device for carrying out an old, and well recognized procedure, and has many advantages over the soft rubber catheter which has often been the only means at hand, when it was found necessary to do *more* than try to remove the liquids by the very *questionable* prac-



FIG. 3. These three "baby-savers," with the obstetric forceps, and other necessary small instruments are all carried in the ordinary sterilizing tray.

the Vienna clinic, namely, the *mucous aspirator* here shown. (Fig. 2). This is the little auxiliary instrument that constitutes the "*right thing at the right time*" of which I spoke awhile ago, and the *use* of which, in a large majority of cases, makes other

tice of mouth-wiping. Evidently, however, the value of such a serviceable, ever-ready little instrument has not been very generally *recognized*, for I found nothing of its kind in the shops of New York or Philadelphia, and therefore had this one made and

placed at the disposal of those who may see a need for it.¹ Personally, I would feel that my obstetric outfit was seriously incomplete *without* it; for *with* it, I am able to promptly resuscitate all cases of "blue" asphyxia

effective means for combating *asphyxia pallida*. Various forms of apparatus, such as pulmotors, and oxygen administrators have been used for this purpose from time to time, *especially* in *institutions*, but they



FIG. 4. Doing the "right thing at the right time."

without resort to other more *time-consuming* and *questionable* methods. There remains to be briefly considered, an *equally*

¹The Aspirator and Stethoscope here shown, together with the author's Obstetric Forceps, are made by *Edward A. Merkel*, 22 S. 17th Street, Philadelphia.

have all been too cumbersome, or otherwise unavailable for general use. More recently the ingenuity of our American instrument makers has given us a mechanical device, that so far as *I* know, beats anything they have abroad, and comes *very nearly*, if not

entirely up to the requisites of an *ideal resuscitator*. I refer to the Infant Lung-motor, which is no doubt already known to many of my readers, for it is not an entirely *new* apparatus. I have used one of these ingenious devices long enough now, to be thoroughly convinced of its *very great value* as a *baby saver*, and I always carry one in my obstetric bag. It is not *only* en-

of the asphyxiated new-born becomes a comparatively *easy* and *hopeful* task. Even those *desperate* cases, where formerly our utmost efforts were of doubtful value, are now encountered with a feeling of assured success. Of course, if the child is actually *still-born*, no instrument or effort of any kind will avail. Or if there has been extensive brain traumatism, our *apparent suc-*

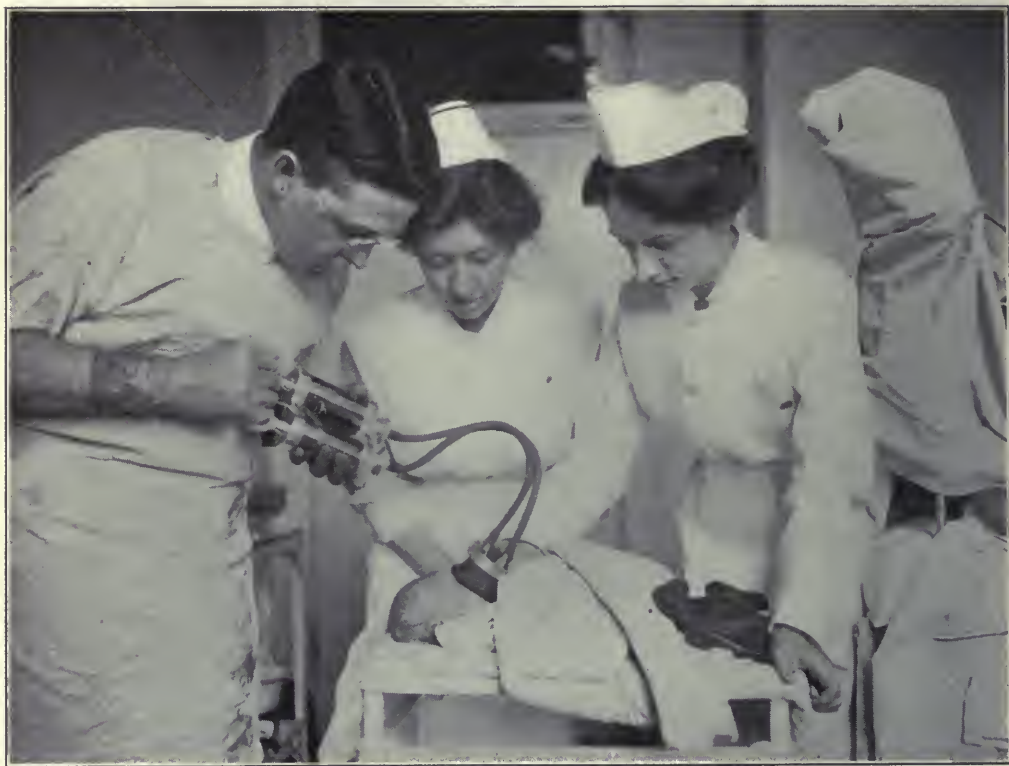


FIG. 5. Method of using the Lung-Motor.

tirely *efficient*, but it has that *other* requisite for general use, it is *small* and *compact* enough to be carried and sterilized in the ordinary tray with the other instruments. (Fig. 3). It is therefore always ready for the immediate use of the obstetrician, who requires no *other* help, than someone to hold the mask to the baby's face. With the aid of these mechanical helps, the resuscitation

cess is apt to be of short duration. These are the cases, whose only safe treatment is the *prevention*, previously mentioned.

It is my routine practice, except in the easiest kind of cases, to grasp the new-born child by the ankles, and hold it suspended head-down against my knees, while with the "aspirator" I quickly clear its air passages of obstructing mucus, etc. (Fig. 4). This

very act of removing the mucus is sufficient stimulation, if the reflexes are still present, to cause the child to *gasp* and begin to *breathe*. Perhaps a spank or two may be necessary after this to make it cry out vigorously, then the cord is tied and cut and the child given over to the nurse. If the reflexes are *not* present, or if it is evident at *once* that the case is one of *profound asphyxia*, the cord is cut immediately, the child's body wrapped to protect it from the further shock of reduced temperature, and work is begun with the lung-motor. (Fig. 5). One cylinder inflates the lungs with a *definitely measured* and *safe* quantity of pure air, while the other exhausts the air, and at the same time removes the fluids that may have been inspired in the course of birth. The "aspirator" is also helpful in the removal of these fluids after the lung-motor has drawn them from the lungs. If there is yet the faintest sign of heart action, the case is hopeful. I am *satisfied* that by these methods I have saved a number of babies that would otherwise have perished, and I believe their more general adoption, will do much to reduce the present high *birth mortality*. I would hesitate to subject this paper to the possible criticism of having been exploited by certain instrument makers, were it not that experience have proven beyond question, the superiority of these *mechanical aids* over the methods usually employed in a field where the *crying need* for better methods, should be heard above *all criticism*.

2503 N. 18th Street.

Stiff Shoulder.—It is worth remembering that abduction is of great value in the prevention and in the treatment of stiffness of the shoulder after trauma.—*Amer. Jour. of Surg.*

MALT SOUP—ITS PRACTICAL PREPARATION AND ITS USEFULNESS.

BY

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In common with a great many other valuable productions, malt soup was first made in Germany.

It is not my purpose to make any extended reference to the literature on the subject; simply enough to show that the *limited* usefulness of malt soup as used or prepared today is largely a result of a *formula*.

Malt soup was first introduced by Liebig in 1865, but it was not used to any great extent until after 1898, when Dr. Arthur Keller published his observations and evolved his "formula" calling for whole milk 11 oz., wheat flour $1\frac{3}{4}$ oz., malt soup extract $3\frac{1}{3}$ oz., and water 22 oz.

Regarding this "formula" and referring to the malt soup extract, Keller says, "according to my metabolic investigations this amount does not exceed the *assimilative limit*." The thought is here plainly expressed, at least as regards the malt soup extract, that the "formula" represents the *maximum requirements* of a baby, (no age or weight being mentioned) possessing normal digestive and assimilative possibilities.

In 1905, Rosenthal of Copenhagen followed with his "formula"; this differed in no great degree from Keller's except that it contained 40 grammes of malt soup extract instead of 100.

In 1914 Erich Muller and Ernst Schloss recommended 50 grammes of raw wheat flour being boiled for 20 minutes in $\frac{3}{4}$ litre of water; this to be added to 330 cc. of raw milk and 100 grammes of malt soup extract;

and tap water to make the whole to 1,000 cc.

From the authorities quoted one can readily see the disposition is to add some definite but variable amounts of whole milk, flour, malt soup extract and water together, the whole to make a normal or full diet "formula," and then force the babies to be fed from the common trough, the contents of the trough depending on who's formula we follow. This is contrary to what we consider practical feeding of infants. Babies well, as well as sick babies, vary too much in their digestive capacities to be fed *en masse*. They must be considered as individuals and fed accordingly.

With the "formula" feeding of malt soup, there is a decided difference of opinion as to the indications for or against its usefulness. This should be easily understood particularly when there is such a variation in the "formula" recommended and also such a difference in the digestive capacity of different infants, the result of idiosyncrasy or incapacity.

Malt soup is generally recommended during the first three months of life, leaving out the first two weeks.

Rosenthal adopts its use in "gastric catarrh and in atrophy of infants during the first year."

The use of malt soup with many hundreds of patients, prepared as I advise, has led me to feel there are no contraindications to its use during the first year as regards age or infirmity, cow's milk anaphylaxis excepted, aside possibly during the first two, three or four weeks of life. During these *first weeks even*, there is no form in which cow's milk can be more safely or more satisfactorily used as a food.

While originally a certain amount of alkali in the shape of carbonate of potash was

added to the food separately, for a number of years the potash has been added to the malt extract and this is put on the market as *Malt Soup Extract*.

Until recently Loefflund's, an imported German product, was the only malt soup extract available; now the Maltine Company are in the market with a malt soup extract. Both these concerns print on the label of their bottles Keller's Formula; this fact, in the estimation of many doctors with whom I have conversed, is a prominent factor in inducing physicians and nurses to attempt the feeding of babies by that "formula," one that meets the requirements of a limited number of babies only.

My object in considering the subject of malt soup is two-fold; first, to condemn the "formula" feeding disposition, and second, to suggest a method that is thoroughly simple, practical and satisfactory.

Before considering the preparation of malt soup let us refer to certain well established facts in infant feeding.

First: Well babies very frequently show an idiosyncrasy to cow's milk fat when given as little as 1 or 2 per cent., they frequently have acid eructations, colic, and acid irritating and frequent stools. Babies *with intestinal infection* are practically all made worse by fat.

Second: Sugars when given much in excess of 3 per cent. tend to cause loose acid stools, maltose less than either milk, sugar or granulated sugar.

Third: The addition of an alkali to a food containing fat or sugar, increases the tolerance in a limited degree to both the fat and the sugar.

Fourth: Substantial cell growth requires above all else proteid nutrition.

The casein of cow's milk particularly when mixed with a carbohydrate in the

shape of flour, within reasonable limits, is easily assimilated.

Fifth: In feeding a baby, begin with the simplest elements of nutrition, proteid and carbohydrates in small amounts, and quickly, if there are no contraindications, increase to reasonable proportions as indicated by the baby's comfort and development. After having shown ability to take the proteid and carbohydrate, gradually add the fats if considered prudent.

This last proposition contains the essence of our whole system; each baby has developed from a simple base his own formula if we may use that term; and baby and formula from this simple beginning develop together.

In increasing the formula we are guided by the baby's ability to assimilate, by his growth, by his comfort and by what constitutes a reasonable amount of nutrition.

We should always guard against *marked* over-feeding, being guided either by a knowledge of what constitutes a proper amount of food for a certain age or weight of baby, or check our formula by its caloric value, computed in reference to the weight of the baby.

In advising food for an infant greater care and caution should be observed in the case of a baby "intestinally" sick, than in one supposedly perfectly well, though in each case it is always best to begin with small amounts of the simplest nutrition; and build up from this.

When a baby has had diarrhea or an acute gastro-intestinal attack any time of the year, we first clean out the intestinal tract with *repeated doses* of castor oil, two, three a dozen or twenty teaspoonfuls, until the stools have largely lost the offensive odor, and the mucus and the fever have subsided. This may take three, four or more days,

and during this time a cereal gruel and water are the only nutrients allowed the child. After this cleaning out process and the weak carbohydrate and water diet, here, now, is where the malt soup is most valuable, for its use enables us to almost uniformly begin an added nutrition under conditions which baffle only too frequently all other cow's milk modifications. The fact is, if malt soup, skillfully adjusted, can not be used, it is useless to attempt other methods of milk modifications. Our one other resource I feel, is in the use of breast milk.

We have said skimmed milk is much easier of digestion than whole milk so we have the top 7 ounces removed from a quart bottle of milk that has stood from six to ten hours at a temperature below 60° F.; the remaining 25 ounces, shaken, gives a milk that contains about 1 per cent. fat. Of this we begin with from 6 to 10 ounces, and experience has taught us we may practically always safely use as much as the 10 ounces. Of the malt soup extract we begin with one teaspoonful for the day's food. Of flour we use, usually, two parts the amount of malt being used. While ordinary wheat flour is usually advised, we always use one of the "*prepared flours*," barley or wheat, the starch here being in a much more easily assimilated form. Water is added to make up the number of ounces required for the day's food; for a three months' old baby 4 ounces at each feeding would be about our maximum, 7 feedings in the 24 hours. For this baby 18 ounces will be added. We have now:

Skimmed milk, 10 oz.

Flour (prepared barley or wheat), 2 teaspoonfuls.

Malt soup extract, 1 teaspoonful.

Water, 18 oz.

Mix milk and flour in one bowl, (mak-

ing a careful paste of the flour by adding but a little of the milk and rubbing this to prevent lumps); the malt and water are mixed in another bowl; then the two mixtures are put together in a double boiler, and boiled slowly for thirty minutes. Add boiled water to make the 28 ounces and divide into the 7 bottles; cool quickly and put on ice. Practically never feed a baby oftener than three hours from 6 A. M. to 6 P. M. and at four-hour intervals from 6 P. M. to 6 A. M. Give water between times if baby apparently wants something to drink.

Having made our beginning with the above formula, the stools if they were not right, will quickly become a brownish yellow, with practically no odor, and of a pasty consistency. If they do not assume these characteristics, but are offensive to a degree and the color is not right, cut out the milk again giving barley gruel in the interval. Give 3 to 4 or more one-half teaspoonful doses of castor oil at hour intervals, and in twelve to twenty-four hours again begin our simple formula.

Occasionally on this simple food there will be a disposition to have too many thin, slightly acid, and possibly green stools. Here we need more alkali than is contained in the small amount of malt soup extract. Continue the same food, but add to each bottle one teaspoonful to one tablespoonful of lime water or better still two to five grains of bicarbonate of soda.

It is infrequent that we encounter these experiences, but they do occur and one should meet the emergency.

Our baby having shown ability to take and properly digest the above weak formula, we next increase his skimmed milk by one or two ounces each day or every other day until he is getting 16 ounces a

day; this for a three-months' baby; if older (five or six months) the skimmed milk may properly be increased to 20 or even 24 ounces, adding sufficient water to make the day's quantity of food.

After the skimmed milk has been worked up, then increase the malt and flour, keeping the flour about double the amount in teaspoonfuls to the malt.

We seldom, in beginning to feed a baby, exceed a tablespoonful of malt and two tablespoonfuls, (rounded) of flour to the day's food.

If a baby can digest cow's milk fat he should have it. About six out of ten *well* babies over six months of age, can take cow's milk fat up to 3 or 4 per cent., and do well on it; the remaining four have any where from a slight to an absolute idiosyncrasy.

In a baby having had diarrhea, we should be very guarded about adding cream, especially if the weather be still warm.

After having worked our formula up to what we are wont to consider a reasonable amount of skimmed milk, malt and flour, we may (?) add increasing amounts of the cream we had removed.

If the baby has had diarrhea or if it is hot weather, we must be particularly careful; replace but $\frac{1}{2}$ ounce to the day's food; if this is taken and cared for properly, gradually increase the amount of cream to the proportionate amount belonging to the skimmed milk in our formula. If we are using 16 ounces, and find we can prudently replace 3 to $3\frac{1}{2}$ ounces of the cream, then instead of skimming the milk and adding the cream, use whole milk and take 19 to 20 ounces.

Let us remember that as we increase the cream, there are increased possibilities of discomfort to the baby from colic, and loose

yellow and greenish stools, and acid eructation. When we have these results we can most prudently reduce the cream and thus make the baby comfortable. At the same time, if the trouble is not very marked, many times the cream may remain, and an added tolerance be established by increasing the alkali, in the shape of lime water or bicarbonate of soda.

Quite frequently babies show such an idiosyncrasy to fat, we are only able to keep them comfortable and well by avoiding entirely or keeping very low with the fat; we are able to do this and nourish the baby by a proportionate increase in the proteid of the milk, as well as the carbohydrate. It is not unusual that an eight or nine months' old baby takes as much as fifty ounces of skimmed milk (1% fat) a day and does well on it.

In any system of feeding we should have some means of checking the approximate propriety of our formula, particularly to avoid marked over-feeding. This is probably best done by comparing the normal number of calories estimated to be required per day, with the number being given. Most authorities give about 45 calories per pound-weight per day up to six months of age as a reasonable amount of nutrition; from six months to one year from 40 to 35 calories per pound per day. Our diet during this period being largely made up of only four or five different elements, and the caloric value of each one being fairly definitely estimated, we can quickly make our comparison.

Whole milk = 21 calories per ounce.

Skimmed milk (1%) = 13 calories per ounce.

Cream (16%) = 53 calories per ounce.

Malt soup extract = 10 calories per teaspoon.

Flour = 10 calories per teaspoon.

In using malt soup as above prepared we must not forget we are using a boiled food. We should give after the first two or three weeks, a little orange juice or scraped raw apple each day. This will effectually prevent scurvy and favor a normal metabolism.

After a baby is satisfactorily established on his boiled malt soup, instead of giving fruit juice, if the milk is safe, and weather and care and protection of food favorable, decreasing amounts of the milk are boiled with the malt, flour and water, the rest being added uncooked, after the malt soup is partially cooled. This enables the baby to get each day, a certain amount of fresh or only pasteurized milk.

Criticism is occasionally made regarding the food described above that it is cumbersome and complicated and that we are going too far from nature's plan.

The writer always answers this criticism that the most ordinarily intelligent mothers, when given *written instructions*, have no trouble whatever in the preparation of the food. The use of the food will quickly demonstrate its value and provides every argument for its efficiency. The condition of the baby tells the story better even than words.

When toothache is caused by decay of the structures, give the patient phosphate of iron and calcium salts internally.—*Med. Summary.*

Castor oil is recommended in the Indian Medical Gazette as an admirable dressing for abrasions, slight burns, small wounds, and the like. Sometimes applications of tincture of iodine precede. It is even believed to be antiseptic.—*Med. Standard.*

MATERNAL NURSING CONSIDERED FROM ITS EVOLUTIONARY AND BIOLOGICAL ASPECTS.

BY

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Newark, N. J.

Reference to artificial feeding does not appear in any literature prior to 1500 and even in 1850 Dr. Francis Condie of Philadelphia makes no mention of the subject in his text-book on *Diseases of Children*; but in 1910 a physician stated before a pediatric society that 60 per cent. of the women cannot or will not nurse their babies. In the older text-books and monographs on the care of babies I have found many interesting observations and suggestions about nursing mothers; in the modern text-books I find chapters on the care of the cow. What does this mean? Merely that we can have change without progress, that physicians too often, like demagogues, are disposed to submit to the popular will.

It may be true that more women do not nurse their babies today than a generation ago, but only superficial impressions can permit us to think that this need be so, that so fundamental a function as that of maternal nursing has undergone so radical a change in so short a time as to be disappearing. No one expects the fifth toe or the molar teeth or the floating ribs to disappear in a thousand years, even though we know they are no longer essential to life or health; and yet we hear it said that the nursing function is disappearing because mothers have not exercised this function for a few years or even a generation or two!

I can only explain this supine willingness to accept this view, so contrary to all we know of the development and disappearance

of physiologic functions, by supposing that there is an imperfect understanding and lack of appreciation of the real value and purpose of maternal nursing in the moral, mental and physical life of the individual and race; and it is largely to direct attention to the place maternal nursing occupies in evolution and biology that I permit myself to bring this question before you.

We need only call to mind the facts the biologists have elucidated in the past fifty years to realize the specificity of mother's milk. The body fluids of animals of similar species were long thought to be very similar: *First*, the chemical differences in serous effusions, in blood, in secretions, as sweat or milk, were shown; then it was noted that while the milk of different species varied only slightly chemically, this slight variation was of vital importance. Thus it was found that the proteid of cow's milk contains no lecithin or phosphorus, while, on the other hand, mother's milk contains minute amounts that are essential to the development of the human young. It was found that the proteid contained different proportions of lact-albumen and casein and had different coagulating qualities, that the fats were of different physical nature and of different freezing points, and lately we have found that the blood of each animal has special bodies produced for the protection of that animal against the accidents and infections to which it is exposed. Even the amounts of thrombin and anti-thrombin, substances that determine the clotting of bleeding points, vary with different animals and in different parts of the same animal.

The milks of different animals similarly possess enzymes and antibodies that are of value to the young of a particular species only. The young of cows need no protection against measles and the milk of cows

carry no such antibodies. The calf's stomach needs no enzymes to aid in the digestion of cow's milk and cows milk supplies none. But, who will say that the presence of enzymes, antibodies, lecithin or phosphorus is of little consequence because small in amount? There is a specificity in milk, no less than blood, and it is not scientific to ignore what the body has evolved after centuries of reactions to environment. This is so definite that Eric Pritchard in a very interesting discussion along these lines maintained that the proteid of a wet nurse's milk may be different from the proteid of the mother's milk and disagree with the baby. The delicate and intricate relation between the amino-acids of the various proteids of different milks and the serum-albumin of the blood of each species definitely indicates that one proteid cannot be substituted for another unless it disintegrates into the same amino-acids or those that are lacking are supplied in another form.

Furthermore, there is a specific developmental relation between the curd of milks of different species and the intestinal tracts of their young. In this country, Chapin more than any one else, has directed attention to this fact. Milk with large tough curds is found in animals with large tough stomachs and small intestinal tracts; milk with fine flocculent curds is found in animals with small delicate stomachs and large intestinal tracts. The calf is being prepared to digest grass, the baby to digest well cooked soft food. The cow secretes a milk that forms a tough curd, the woman a milk that forms a fine flocculent curd. Again, we have here a difference that is radical, that serves a specific purpose, that cannot be expressed in percentages and em-

phasizes the vast differences between milks of different species.

Ought not these profound relations give us pause before attempting to substitute cow's milk for mother's milk—before making it "just like human" as our experts on cows claim they can?

When we analyze the curd of cow's milk and mother's milk we find interesting differences that are rarely mentioned in substitute feeding.

Mother's milk contains lecithin and combined phosphorus, substances important to an animal whose nervous system undergoes its full growth in the first two years of life, but of no value to an animal like the calf, lamb or kid, whose brain is as fully grown on the day of birth as it will ever be, animals who within a few hours or days after birth can jump about and do almost all the things the parent can do, but who never show any further mental development. Again, we have here a specific relation between the mother's milk and the needs of the infant organism. There also is a relation between the kind of curd in the milk and the length of time the animal will remain on milk. It seems that herbivorous animals find it necessary to subsist earlier in life on coarse food and the mother's milk supplies a curd that rapidly prepares it for this function. The human infant has a stomach adjusted to a fine flocculent curd and is being prepared to digest fine well cooked food; it has no need for hard leathery curds as found in cow's milk.

Fiske, from another view-point, gives expression to the specific purpose of maternal nursing. He points out that the higher civilized a people or race the longer has been their infancy as a race and the longer is the infancy or period of dependency, of learning, of adjustment of its individuals.

Of course, the purpose of infancy is that there shall be a period when the young are so dependent upon the parent that they acquire all those fine adjustments to environment from the parents' experience that has enabled them to conquer their environment, that the young may go into the world still better able to adjust itself to its environment and make additional progress.

Now, I feel that maternal nursing is part of this scheme of dependency and infancy. In some lower animals, as the kangaroo or *Simia rhesus* or ant-eater, the young are attached to the nipple at birth and remain so for some weeks—so you see no social duties can take them from their

their freedom from contagious disease in the first year. Enzymes that probably affect the digestion and metabolism are also obtained with the breast milk.

Many are familiar with the chemical difference of the two milks, but I wonder how many really appreciate the total difference in physical and chemical properties? The fats of the two milks contain different proportions of palmitic, stearic and oleic acids, have different melting points, and the fat globules are of different size, all producing a difference in digestibility and absorbability. The proteids contain different proportions of casein and globulin and a different amount of lecithin and chemically

TYPES OF MILK	ANIMAL	CURDS	WATER	FAT	SUGAR	PROTEID	SALT	ATTAINS PUBERTY IN MONTHS
Carnivorous Stomach 60 to 80% of digestive tract	Dog	?	75.44	9.57	3.19	9.91	0.73	6-8
Ruminant	Sheep	Solid	83.5	6.14	3.96	5.74	.66	6-8
Herbivorous	Goat	Solid	86.91	4.09	4.45	3.69	.86	6-8
Stomach 70%	Cow	Solid	87.17	3.69	4.88	3.55	.71	8-12
Non-Ruminant	Mare	Gelatinous	90.06	1.09	6.65	1.89	.31	18
Herbivorous	Ass	Gelatinous	90.	1.30	6.30	2.10	.30	18
Stomach 10% Human								
Stomach 20%		Flocculent	88.20	3.30	6.80	1.50	.20	14 yrs

young. I believe that the act of maternal nursing develops the mother and child emotionally and intellectually, that the warmth of the body, the close contact, the constant play between mother and babe have a value aside from the character of the milk. As Jacobi said in his presidential address before the American Medical Association: "The breast cannot be replaced by the udder, the warmth of the body by the warmth of the bottle."

Now that we are learning that the blood of each species carries substances that give active immunity and that they are excreted in the milk, we begin to understand the resistance of breast fed babies to disease and

combined phosphorus that are very important in bone formation and brain development.

Again, there is no such stability in the breast milk as in the milk formula in the bottle. It changes not only several times a day and during each nursing, but is influenced and determined by the frequency of nursing, length of nursing and vigor of nursing, that is, it adjusts itself to the kind of baby and the condition of the baby at the breast. How valuable this is when the baby is not feeling well, or needs less energy food, as in summer, all who treat babies know. While a milk modifying laboratory looks impressive, with its big pasteurizers

and instruments of precision, it is not comparable to the delicate laboratory of mother's breast.

These are the real reasons why a baby should not be bottle fed, even though you think you can keep it alive on the bottle and have it look well nourished. But the fact that twenty-seven times as many bottle fed babies have diarrhea than breast fed, and that ten times as many die, or that in a thorough study of a small city in Germany of bottle fed babies a very small percentage was found alive at 21 years, may seem to you of a more convincing and practical nature.

Now, I suppose the question you will raise is, that admitting all this, many mothers cannot, will not, or do not nurse their babies and artificial feeding is necessary. Of course, some artificial feeding is necessary; for instance, when a mother dies and a wet nurse cannot be found; but I shall try to make clear that it is not necessary as often as some gentlemen tell us.

In New York, Doctor Schwarz carefully followed the nursing of 1,500 women and found:

96 per cent. nursed entirely.... one month.
89 per cent. nursed entirely ..three months.
77 per cent. nursed entirely....six months.

In a series of 509 mothers I found:

95 per cent. nursedone month.
81 per cent. nursedthree months.
79 per cent. nursedsix months.

In the later and more highly developed work of the Child Hygiene Division of the Department of Health it has been so rare to find a woman who cannot nurse her baby that when a nurse recently reported such a case to me I requested a report from another nurse before I was willing to believe it. She reported that the woman had milk in her breast but refused to nurse.

Now this brings us to the real practical side of our question: If women can nurse, why do so many not nurse? Many who are feeding the baby on the bottle will and can give the baby the breast and many who are only partially nursing the baby can and will breast feed entirely as can be shown by the following experience with 974 mothers under our supervision in the Division of Child Hygiene.

	First visit.	One month later.
Breast fed	21%	66%
Partially breast fed	53%	24%
Artificially fed	26%	10%

The reasons for some mothers not nursing, are as manifold as life; excessive fatigue and anemia, due to excessive factory labor and prolonged standing from early girlhood, insufficient and improper nourishment, insufficient rest during pregnancy on account of too much money or too little, as shown by society women who live on sweets and excitement, or the poor women who work in the factories almost to the day of confinement; improper, inadequate or no care and advice during pregnancy in diet, hygiene, care of nipples and breasts; insufficient diet during the puerperium; the bad psychological effect of milk depots, of a doctor who says: "I don't think you'll be able to nurse," of a neighbor or nurse who on the second or third day after birth, when she does not see a flood of milk or a large breast, doubts the mother's ability to nurse. The indifference of the accommodating doctor, who when told that the baby cries and the mother hasn't enough—says, "Give it a formula." When you add to this all the notions, superstitions and prejudices about the nursing mother's diet, and the signs of sufficient or insufficient milk, you have plenty reasons why many mothers who can, do not nurse their babies.

What are the contraindications to nursing? I do not know of any absolute contraindications. If the mother has a closed case of tuberculosis there surely is no objection as far as the baby is concerned, and you do not know until you try what will be the effect on the mother. Nursing causes not only a proper involution of the pelvic organs, but stimulates the metabolism as a whole. Whether it will do this in a particular case, you can only tell after a trial of a few weeks. If she has an open case of tuberculosis, of course, nursing exposes the baby to the infection; but if the baby is to remain in the house in the care of the mother I prefer to have it nursed, because then our baby will at least have the benefit of breast milk and increased resistance to disease. Tubercular mothers will fondle and infect babies whether they nurse them or not.

Heart disease, nephritis and chronic nervous disorders should be viewed in the same way. Acute infections like puerperal sepsis, pneumonia, erysipelas, typhoid, typhus, present different problems. There is no proof of the transmission of these diseases through the milk, though streptococcus and bacillus of pneumonia have been found in the milk.

So far as the baby is concerned, I would put the baby to the breast and closely watch the results; if it is felt that this prejudices the interests of the mother it may be discontinued, but I think you will find mothers with acute diseases can nurse without personal injury.

Menstruation, even if it affects the baby and mother for a few days, should never serve as a reason for discontinuing the breast. Pregnancy from the third up to the fifth month is no contraindication unless the baby does not make proper prog-

ress, and even then it only calls for alternate feeding.

Even a breast abscess need not stop breast feeding. Pain in the breast, headache, pain in the back and distress in the mother, crying, vomiting, and diarrhea in the baby, are only signs of poor technic in nursing and call for readjustment, not for a formula.

I shall not try to tell what to do for all the abnormal symptoms that develop when nursing is improperly carried on—it is simpler and quicker to tell how to prevent these conditions.

A proper regime must be established for pregnancy, including rest, proper food, exercise, care of skin, bowels and kidneys. The nipples should be made erectile by manipulation and massage with cocoa butter. Alcohol hardens them and predisposes to cracking. Cleanliness is the best preventive to fissures and abscess. If large and heavy the breast should be supported.

After birth the baby should be put to the breast every four hours after the mother has rested, and from the third day on every three hours. The nipples should be washed with sterile water and cracks carefully watched for. If any appear argyrol 10-25 per cent. is very effective after nursing. Balsam Peru and castor oil, equal parts, are also good. If the fissure is severe, skipping one breast every second nursing or even longer may enable the nipples to heal. A nipple shield rarely helps and there is no excuse for a breast pump in the nursery. Caking and lumping should be carefully watched for; hot stupes applied every half hour for one hour will save many a breast for the baby. I know of no quicker way of forming an abscess than the application of ichthyol. If an abscess is forming, prompt

incision will save the breast and sometimes the mother.

The baby should be nursed every three hours during the day, and every four hours at night till about six months; at ten months most babies will go from six to six. The nursing should take from ten to thirty minutes; the baby is the best judge. Difficulty is often experienced in starting the baby on the breast; but with calmness, perseverance and faith all babies will nurse, unless they are suffering from cerebral injury. This, by the way, is a very valuable sign in cerebral hemorrhage, or fracture of the skull in new-born babies.

The mother needs something more than tea and soup to form milk. Most mothers get along better on a soft diet the first three days with a carefully selected full diet on the third or fourth day. There is no special diet for a nursing mother; everything that is nutritious, easily digested and that agrees with her is good for her and the baby. The important thing is to tell mothers what they should eat, not what they should not eat. The first two months are months of adjustment, during this time no baby should be weaned because it is fretful, cries, or is not gaining as much as some one says it should. The milk of many mothers reaches its full development only after the first month. During this time and, indeed, whenever mother's milk seems insufficient, supplementary feedings, not alternate feedings are indicated, which later may be discontinued.

How can we tell if a mother can nurse or will be able to nurse her baby? We can't—only the baby can. Milk analyses are very apt to mislead us. The milk obtained by the breast pump or hand is not the same as flows to the smiling mouth of the vigorous baby.

The baby's condition and weight, plus the weight of the baby before and after nursing, is the only correct guide, and we should not condemn a breast in less than a three weeks' trial, nor before we are sure the mother is doing what she ought to be doing.

The mother's mental condition is more important than her physical condition. If she believes she can and must nurse her baby and that a sympathetic, patient doctor is always ready to listen to her fears and worries, little difficulty will be experienced. The nursing function is dependent on the stimulus applied to the nipple, the reflex arc between the sensory and special secretory and vasomotor nerves of the breast, and the impulses from the brain to the reflex center. Doubt, fear, indifference, in short, the emotional reaction of the mother, determine to a large degree the response in the center to the peripheral stimulus.

Regularity and a three hour interval are most valuable in giving rest to the baby's stomach, and establishing proper habits of sleep, peace and comfort for the mother. I do not know of any one factor that has given such wonderful results in successful and satisfactory nursing as the three hour interval.

The mother should be seen once a month and her baby weighed so we can show her the actual evidence of her successful nursing, dissuade her from too early mixed feeding, strengthen her against the foolish advice of neighbors and give satisfactory answers to the many questions about the baby and herself. No changes should ever be made without first consulting the doctor. Peace of mind is often the one factor lacking for successful nursing.

I advise a normal rational life for nursing mothers. I encourage her to eat easily,

digested, nourishing food and prohibit only those things that she knows upset her. This keeps her more contented, makes her look upon nursing as a physiological normal function—and she nurses.

Rest is very important. An afternoon rest or early retiring to bed is of more help than food.

Healthy outdoor pleasures often give the mother the sense of contentment that is necessary for a successful nursing mother.

With mothers who can be trusted to follow instructions absolutely, I allow one bottle in the third month if the baby is progressing satisfactorily. The formula is usually 1 ounce mixed milk, 3 ounces boiled water, 1 dram cane-sugar, pinch of salt. The milk can be increased every third day $\frac{1}{4}$ ounce with a reduction of water till the formula is, 2 ounces milk, 2 ounces water. This bottle is increased according to the needs of the baby; usually the number of ounces is same as the age in months, and the proportion remains the same till the ninth month. Just how soon other bottles are added depends on the weight and general development of the baby. With many mothers the baby must be weaned at six to nine months. Some will nurse very satisfactorily up to a year. Weaning extends at least over a period of one month, during which time at regular intervals of about five days an additional bottle replaces a nursing till only the night nursing is left.

I do not think that night nursing should be practiced for any length of time at this age, first, because if properly trained the baby will not require a night-feeding after ten months, and further, because the breast is returning to its early condition and secreting a milk similar to colostrum, which is not of the proper character for the baby. The mother's breasts will never need

anything more than a supporting bandage in this method of weaning. I abhor all ointments and see no need for them.

The mother's diet can be dry and a light catharsis established. I insist that the baby be established on milk before any additional food be allowed, because I have noticed that if this is not done the baby will often spurn the milk, which should remain the main element in the diet for the first five years and is always our standby in illness.

After the baby is established on four or five bottles in twenty-four hours it is easy to introduce orange and beef juice; cereals, toast, stewed fruit, potato, vegetables, eggs, puddings and custard in the second year. Proper intervals and regularity are the two most important elements,

Babies are weaned usually between nine and twelve months, although in Japan they are nursed five years. Infrequent nursing impairs the milk, so while weaning should extend over a month, when the mother is nursing only twice a day the milk returns to its colostrum character and may be harmful.

Permit me in closing to quote from an address delivered by Jacobi in 1904:

"In the face of such facts what are we to say of the refusal of well situated and physically competent women to nurse their babies? I do not speak of the four hundred, I mean the four hundred thousand who prefer their ease to their duty, their social functions to their social duties, who hire strangers to nurse their babies, or worse yet, who make believe they believe the claims of the infant food manufacturers, or are tempted by their own physician to believe that cow's milk casein and cow's milk fat may be changed into woman's milk casein and fat, that chemistry is physiology, that the live stomach is like a dead laboratory bottle, that the warmth of the human bosom and that of a nursing flask are identical, and that cow's milk is like human milk when it carries the trademark "certified" or "modified."

SYSTEMIC DISEASE CAUSED BY EYESTRAIN.¹

BY

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The culmination of the ordinary eyestrain diseases at about 40 is then doubled or trebled in intensity by the presbyopia which from 40 on, increasingly afflicts everyone up to near the end of the ordinary life. Although ignorant of this great pathologic factor, the *Life Extension Institute* states that the chances of death after 40 have increased 20 per cent. in 30 years. It is more certain that the "brain-workers," in especial, are giving out more frequently or earlier in life than heretofore. Moreover, insanity and all sorts of mental and nervous diseases rapidly increase with each passing year. Forty-three big life insurance companies find that the life of the alcoholic drinkers is four years less than that of the non-drinkers. The general morbidity-rate cannot be determined with any real accuracy, and yet it is of the utmost importance; but relatively it must be outrunning the trend downward of most other evils of modern life. Invalidism is becoming a frightful fashion. The cost of health hunting is as horrid as it is incalculable. Sanitariums, asylums, "homes," hospitals, "cures," and health resorts, medical, non-medical and anti-medical of a hundred kinds, and quackeries of a thousand varieties, indescribable, innumerable, are everywhere. The best paying businesses in the world are life insurance, rattlecreekisms, healthfoodisms, drugisms, "spas," "resorts," hostelries, and the rest, all dealing

with the sick. But either the sick do not get well or they multiply too rapidly.

I believe that the real causes of much of this, and of many of these diseases that afflict us, are little recognized, and I wish tonight to ask your attention to one etiological factor that is almost unrecognized, at least unacknowledged by the majority. It deserves careful pondering, and evaluating without prejudice. A large number of witnesses could be called, have, indeed, already testified, as to the diagnosis and the cure which I urge. Their testimony began 30 years ago, so that as with every great medical discovery this also has been denied by the experts, leaders, and officials—the rank and file, of course, also—for the required third of a century; we may therefore now safely accept, at least test, the "new" old truth which is soon to arise "with healing in his wings."

There are three great classes of diseases, the infectious, the organic, and the functional. The first, thanks to medicine, truly scientific, has been pretty well conquered; *per se* the second is almost as well understood as, perhaps, it ever will be. The third is not, commonly at all understood; and, in order to get away with the bothersome symptoms, they are absurdly jammed into the other classes of diseases, and, soon or late, after much bother, patient and disease are sent about their business of slow or speedy dying.

What, then, are these functional diseases which play all the leading roles in the big tragedies of our lives? The vastly greater part of all of them is simply one disease; and it is one disease only, because of the crude stupidity of the ancient Greek, Latin, and medieval physicians,—some modern ones also,—and their misnaming of it, followed down to this minute by continued

¹Read at the meeting of the Atlantic County Medical Society, March 12, 1915.

misnaming, and misunderstanding, and minimizing its vital power and universality.

It is *migraine*, literally half-headedness, meaning pain or ache in one side of the head, and carrying no suggestion of the real etiology and pathology. It well illustrates the fashion, antique and modern, of squatting down upon one symptom of a disease and acting on the assumption that there are not a dozen or score of far more significant and important ones, ignored, and ungath-

long to other diseases, or which *per se* are thought to be distinct nosological entities. Practically, *e. g.*, all neurasthenia and nervous breakdown is migraine, and the "rest-cure" without scientific spectacles never cures. When in bed and read to, the eyes are not used or strained, so the symptoms subside, to return when the patient returns home to eyestraining duties or amusements.

3. The single causative factor of these long lists of symptoms is unknown or scorned as the folly of unscientific hobbyriders and cranks.



Mental efficiency test in Battle Creek Public School.

ered. To my mind, migraine is a disease of far more kinds of symptoms, of greater importance and frequency and productive of infinitely greater suffering than any other; that is, it increases the morbidity and mortality rates far more than any other primary cause, perhaps more than all others combined. I base this statement, exaggeration you may call it:—

1. Upon the fact that migraine is the great preparer of the soil for almost any other disease, and the soil in any adequate pathogenesis is as important as the seed.

2. Migraine has a vast number of unrecognized symptoms which are held to be-

4. The long, often life-long, continuance of these symptoms is overlooked or not rightly interpreted.

5. The oculist or optician into whose hands the one migrainic patient in a hundred may fall does not order the one peculiar pair of glasses necessary to cure one, or any, or all, of the numberless symptoms of eyestrain.

6. The cure of migraine is, as a rule imperfect or impossible after 45, that is, after ten, twenty, thirty, or forty years of ruinous suffering and secondary disease have made cure protracted, partial, or impossible. Long continued disease, however purely functional at first, all of us know, must develop into organic disease, or into

such loss of recuperative power that permanent invalidism, premature senility, and hurrying death cannot be much delayed. The vast majority of neurasthenics and breakdowns arrive at from 42 to 45, just when presbyopia strikes first and hardest at the life centers.

To the medical barbarism of the Greeks, of the Romans, of the middle ages, and to much even of that of today, hemicrania, hemicrane, the megrims, migraine, etc., was one-sided headache. And note that it was the left side of the head that most frequently ached. So far as I can learn not a soul has ever seen the self-evident explanation that right-handed people are right-handed because as babies they were right-eyed, and therefore eyestrain in such people is greatest in the right eye, because it is that most used, and especially in writing and right-handed tasks. Consequently the morbid oculo-neural reflex will go first to the left-brain. But the greatest and most so-called "scientific" text-book in the English language on medical practice, does not allude to headache of any kind as a symptom of any disease! And who among the American authorities on medicine or neurology cares a fig for the whole question? At best they all will say that it is a symptom of any and every disease, from the top of the head to the big toe-nails.

But headache is the commonest complaint of our millions of citizens,—first above the eyes, on either or both sides of the head, occipital, lateral, vertical, temporal, basal, ocular even, and of a score of subvarieties, and intensities.

Sometime or other during the last 5 or 10 centuries there was prefixed the word *sick* to the word headache—*sic!*—and then the whole world found that nausea, vomiting, biliousness, and a hundred varieties of stomachal and intestinal symptoms, were of

greater importance, even, than the headache; these were then loaded upon the symptom-complex. But of course the eyes were not even alluded to. That the cone was thus poised upon its apex didn't matter, even if it began to get very tipsy, even if it wobbled terribly.

Let us pop the big cone over on its base by frankly saying that only a small fraction of the symptoms properly chargeable to migraine have been suggested.

Because our millions of migrainous patients especially those who have had sick-headache long and often, have usually had a dozen or more of other symptoms than vomiting and headache, even from the first, and as life wears on, and off, there are others, and more, and still a lot, new and illogical, that appear. The patients forget many in their terror at the new ones, and if one after another twenty physicians are consulted, a single and different symptom may be seized upon, and new diagnoses made and, *ex necessitate*, new treatments instituted.

What are some of the other symptoms which I for one know by long and pathetic experiences are always, or often, or occasionally, the certain results of eyestrain?

1. *Diseases of the eyes themselves:*—Blepharitis, styes, conjunctivitis, keratitis, iritis, amblyopia, retinitis, and surely senile cataract, heterophoria, squint, etc., even or often, and usually directly and primarily. For instance: a fellow-citizen of ours here, one of the finest gentlemen I have known, aged 12, came to me sick and nearly blind, unable to go to school, with a frightfully rapid nystagmus. One eye is still blind, and hopelessly so; the other now permits him to lead his classes in school, to play a good game of ball, and all that, and more. He wears an astigmatic lens of *only* 6 diopeters over his "good" eye.

2. *Colds.* How often we find that stepping into the sunshine brings on sneezing! This explosion caused by a sudden excess

of light upon the optical centers returns by natural reflex to the iris, and to the nearby mucous membrane of the nose and pharynx. Ametropic neuroses act in the same way, and also through the tear-duct drainage, to set up congestions and inflammations of the respiratory tract. Constipation also adds fuel to the flame, and so another factor exaggerates the fever of the whole interdependent mucous membrane tract of the body. It is needless to add that the death-dealing diseases of the lungs, pneumonia and pulmonary tuberculosis may start with a simple precedent cold, or series of colds.

3. *Functional Nervous Disorders of the Brain.*—Practically all head and scalp and face pains, aches, neuralgias, etc., may be the result of the reflexes of eyestrain. One of my patients had violent toothache when she read or wrote, and the toothache stopped so soon as she looked at a distance.

Swoonings and Faintings, I believe, are ten times more common than we suspect. Deft questioning will elicit the confession, as I have often found. One case I shall never forget. A woman of 32 gave me a long string of migrainous symptoms, and I prescribed glasses. I did not see her for two years, when she confessed that all sick-headaches, daily vomiting, etc., had vanished at once with getting the glasses. Then she sheepishly confessed that she had concealed from me the fact that since a little child she had fainted away several times every day, and that she had generally lain as if dead, one, two, or three hours, most of the days. She had never had the slightest sign of an attack from the hour she put on the glasses two years previously.

"*Trigeminal Neuralgia*" is a mildly highfalutin name for pain in or about the face. A famous surgeon dug into the face of a physician patient and pulled out and broke off the supra-orbital and other external nerve-trunks which he could get hold of; incidentally he paralyzed the upper eyelid so that the man could not raise it and see with his eye at all. Later the patient, Dr.———came to me saying that he was going to kill himself if I couldn't help him to kill his continued neuralgia and enable him to carry on his practice. The great surgeon had jerked off and broken his glasses. I put new ones on again, and the

man is now practicing medicine, happy and successful.

Yesterday comes the report of marvelously successful cures of trigeminal neuralgia by means of deep injections of alcohol into the gasserian ganglion. Successes? Bosh! Glasses? "Throw them into the waste-basket?"

Chorea of many parts, especially of the face, tics, etc., also disappear with correct spectacles. I am convinced that epilepsy is primarily due to eyestrain, or to its secondarily caused diseases,—often, if not always. But only on condition that the precisely correcting spectacles are got early enough in life or in childhood. I have cured several epileptics even in early adult life, but I hold out little hope in such cases. The worst case I ever had was that of a physician's child of five years, who was having petit and grand mal attacks almost all the time. It required a year or two of attention to get the boy well.

Deafness.—Anybody can make the ears roar by opening the mouth widely and closing the eyelids tightly. Thousands, perhaps millions of good folks are today suffering from tinnitus aurium. How much unnecessary deafness there may be in the world because of the unrelieved reflexes of eyestrain to the organs or hearing! Last month came a lady from New York whose right ear was threatened, and the left had been long absolutely deaf. I tested it. Perfect hearing came back next morning, and with rapture she said:—"This morning when I put on my new glasses, something cracked in my deaf ear and the deafness was gone." Months later came a letter from her bubbling with gratitude.

If you will read the reports made by Menière and his followers you will see that every patient's first attack was simply an explosion of violent sick-headache vomiting. The nonsense of the semi-circular canal-disease is apparent. The ear disease of the superstition is simply the hurt of the ear by the concussion through the Eustachian tube in eyestrain vomiting.

Mental Disorders, Confusions, Stupidity, Despondency, Decay, Insanity of Many Kinds, and Suicide are common results of morbid ocular function. Mental nausea, causeless despondency, unnameable and indescribable despair and pessimism, without

other definite disease known or unknowable are seen, and bitterly complained of by most of such patients. Ten to one the eyes are the sources. I could report hundreds of striking examples; I believe that one-third of our suicides have eyestrain as their primary or sole cause. Let me illustrate with one of my most recent cases:—A high official of a foreign government had been long treated in New York City by many eminent physicians and specialists for what they told him was "heart disease." They knew, I must suppose, that he had as sound and perfect a heart as man ever had. Expert opinion so demonstrated it. He may have had functional tachycardia; I think not; but if so, nothing is easier to cure by glasses than just that. But he was mentally very ill. Extreme depression, melancholia, etc., obsessed him as an awful nightmare, and his sanity was going to the dogs. He was constantly thinking of suicide, and of homicide, threatening in his wild mindedness to kill his wife. One of our fellow members sent him to me. I found one eye pretty nearly ruined so far as vision or usefulness was concerned; the other, slightly less amblyopic, was given nearly perfect vision by a high power astigmatic lens. He had never seen much of the world before, and when he went out of the optician's store, he stood for one hour or more looking at the houses and street in rapture. He was also at once cured of his old but hitherto uncomplained of stomachal and intestinal distress,—until—until a year afterward he got my prescription filled by an untrustworthy optician, and his old gastric sufferings were at once upon him with a new intensity. In his fright and ignorance of their eyestrain origin he bolted for Europe! Imagine a European Spa doctor doing any sick person any good! He returned by and by sick as ever, but sufficiently sane to come down to see me before preceding to other extremes. I found his glasses incorrectly made and worse adjusted, and three weeks ago I sent him off once more with ametropia neutralized. Ten days ago I received a letter from him which I quote:—"The new lenses did wonders. As soon as I got them on Tuesday I felt some magical electrical stream in my veins, which gave me more energy and efficiency and especially more love for life and everything. The effect on my mind

of the new spectacles was marvelous from the beginning. I can positively say that I never noticed such a reasonable thinking in my cocoanut (expression of Mrs. X.). In my business I already notice improvement in my work and I find pleasure in doing things, which never appealed to me before. I feel healthier, forget absolutely about the existence of my heart and stomach and have found already opportunity to verify the real good condition of these two organs by putting them under examination in some trouble of another kind, etc. . . . The result of experiments are wonderful. . . . For all this provision of health you injected into me, I have not words to thank you, realizing now the power of your science."

5. *The Gastric and Intestinal Reflexes of Eyestrain* are the next in frequency after the cerebral effects. Fully one-half of all my many thousands of patients show these diseases; and surely a large percentage are cured. Even for hundreds of years migraine has been described as sick or bilious headache, that is, vomiting, nausea, indigestion, constipation, etc., going along with the headache of eyestrain. It stands to reason that when morbid vision is at the root, the tree will wither, because, note well, vision is the source and essence of memory and of personality, and the condition and method both of physical and mental activity. I conclude that surely 50 or 75 per cent. of the run of eyestrain patients will, if closely quizzed, tell of long continued or severe belly-troubles,—vomiting, etc. In proof, a bit of history of one of my banner cases:—

A great financier, six years ago, came to me from one of our biggest cities, telling a long story of treatment for a long time, by a long string of most famous experts in neurology and gastrology. He had spent money liberally; and had been stomach-washed, starved, dieted, drugged, and neurologied until he was thin as a rail and about at the end of his rope and also of his hope. His chief complaint or symptom among others, was explosive vomiting, as I have called it. He had almost vomited his toes up, he said, every day, for months and months, until at last he had to carry a pan with him when he crossed the room, fearing a sudden attack. I glassed him, as the slang has it, and now for years he has

not vomited once since that day. He came¹ from London to see me a couple of years ago, to have his glasses changed.

We hear a great deal about stomachal diseases caused by proptosis, dilatation, constriction, etc., of the organ. I have had patients come to me wearing mechanisms about the pelvis like the armor of a deep-sea diver, in order to hold the stomach up. The burden of the machinery doubled the burden of life, and probably quadrupled the diseases of the stomach. A few years ago a powerful medical journal came out with a leading editorial advising, demanding, and commanding that whenever a patient had the least and slightest symptom of functional stomachal disorder of any kind, at any time, the poor devil should instantly be put upon the operating table, the stomach exposed and examined for the undoubtedly existing gastric ulcer or other organic disease.

Concerning any pelvic disease which seems to command laparotomy, I shall read a few words of Dr. Morris, a well-known surgeon of New York City:—

"Some years ago my attention was called to the subject of eyestrain and I at once made some investigations and found that many cases that were sent in for surgical operations were in reality subjects for proper glasses. These included cases of various facial neuralgias, gastric disturbances with the question of ulcer of the stomach, and in fact a large range of cases in which the cause for disturbance was not quite clear, but in which the physician thought best to send the case to me, as surgeon. A good eye man cured so many of these cases that it opened my eyes widely to the vistas of a new field of observation. I saw so many made well by proper glasses that it was a revelation. Most of my practice was in New York and when I sent selected cases to ophthalmologists for examination relative to the subject of eyestrain, I found not only that much skepticism existed among eye men, but I was

even looked at askance by some and was informed that I had better stick to surgery. I had learned too much about the subject, however, and it became necessary for me to go over the field very carefully and select ophthalmologists who were familiar with the subject."

The man in these piping times of peace, who annually refuses 50 or more thousand dollars' worth of operations surely has several other virtues besides unselfishness.

I will close this digression as to stomachal diseases, morbid shapes, and death-dealing positions, and proptoses, with a little gastrologic sermon:—

Once while trying to get off the pelvic armor platings and props of a patient with severe gastric disease, I wandered into the storehouse of a very scientific anatomical museum. Among other strange things, I came upon a big, deep, and long tank, containing the strangest lot of crazy bladders, dried and blown-up. There were, perhaps, 50 of these of every conceivable grotesqueness of shape and size that an anatomist with *d. t.* could well imagine: hour-glass shapes of every contour which Euclid could have devised, short, or long, and slim, or long and immense; round, or oblong, or, vertically so; ludicrously big or little, and so on and so forth. I said to the anatomist: "What a weird lot of bladders! How could they have carried on their jobs in life? What hideous diseases must other organs have suffered?" "Nonsense, man!" he said, "these are not bladders at all. They are human stomachs!" In dazed amazement I begged pardon for my clownish ignorance. Finally I gasped out a question as to what awful gastric and digestional diseases the poor men suffered who had these caricature stomachs. And then the answer: These dried and wind-blown stomachs were taken from murderers who were electrocuted in the prison, and they were as bully eaters and digesters, and as healthy and strong as men could be. For me that ended a mighty deal of proptotic, symptomatologic, and dietetic gastrology. I secured the consent of the stomach specialist of my patient that the battleship armor should be removed. The patient got well.

6. *Lateral Spinal Curvature.*—I once asked a doubting Thomas, a Professor in one of our popular universities to stop with me on the streets and watch the poise of

¹ He brought his wife with him for whom I had ordered spectacles a year previously, but, because of vanity, she had never worn them. She was haggard and her former beauty gone as if ten years had struck her. Notwithstanding he was not now minded to strike her, as she now solemnly promised to wear glasses every minute of her waking life.

body, slant of shoulders, and morbid swing of one or both feet, as men and women passed, back to us. The shoemakers, tailors, and dressmakers have long disguised the symptoms, but quite unsuccessfully to expert observers, so that even by orthopedic surgeons and inexperienced laymen crooked spinal columns may be diagnosticated in a majority of passers-by. He was convinced; the facts stared at him. I secured the careful examination of about 4,000 entering freshmen in his University, by experts, for several years, and the physical examiners reported that nearly 90 per cent. had lateral scoliosis. Long and painstaking studies have convinced me that this hideous deformity is ocular in origin and caused by right-eyedness and right-handedness, and the morbid writing posture of all school children, at flat desks, or at desks with insufficiently sharp pitch or slant. Can any earnest hygienist believe that these permanently and organically crooked but living back-bones, strained every second, do not produce symptoms and diseases. In some way or other will they not bring about sickness and shortening of the life? There is not, I suspect, a hygienic school-desk or office-desk in the United States. I show you a picture of a lot of young folk taking an examination in hygiene and efficiency conducted by experts in the name of hygiene, etc. Think of the spinal tortures, and those of the necks, eyes and minds of these pitiful vivisected boys and girls. Think of the unscience, inefficiency, and antipedagogy of these pedagogs! And what philanthropy!

But "*Grau ist alle Theorie*," or, as we plebs say, "The proof of the pudding is in the eating." Theory and preaching are wearisome; facts alone are convincing. Let me epitomize as briefly as may be a few case-histories, each illustrative or suggestive of a thousand:

Two highly educated physicians and surgeons in South Africa repeatedly assured a patient there that she would soon be blind, and therefore that she should not come to New York in order later the better to carry on a great philanthropic work among her home people. She came to me to find out why she was half-blind and why she should soon become wholly so. I answered that the reason was because she had not been given glasses to prevent it, and to secure good

vision, and to bring back her badly impaired general health. Today she has perfect health and vision and is hard at her hard job in life, sound and happy, and with a vigor and zest never before dreamed of. She needed simply high power astigmatic glasses. She now has a second gospel to take back to the Boers at home, and she is going to preach and teach it as zealously as the first one.

A word may be said here as to the seemingly strange fact, wondered at by everybody, that the vast majority of the reflexes of eyestrain do not affect the eyes, but are shunted elsewhere. "Oh, my eyes never hurt," patients will say, "It is my head, or stomach, or nerves," or 20 other organs of the body that are sick. The answer to that nonsense is easy but a bit long and tiresome. In brief, it is that the health and function of the eyes are of more value to the whole body and to life than are other organs; memory and personality are largely results of transmitted and acquired ocular function. The very letters of the alphabet are conventionalized pictures. Every act of body or mind is dependent upon instantly acting ocular data and guidance. There are nearly twice as many optic nerve fibers as there are in the in-going spinal roots of the whole body. Of old, God was wisely and best pictured as an Eye, and it was that God who made the human eye, and who said, *Let there be Light!* Color, light itself, from a colorless lightless world, are by the God of Vision, made in a black part of the brain from colorless and lightless etherwaves, by the ocular mechanism as a whole.

A bright-minded, jolly fellow came to me four or five years ago telling a long pitiful story of what he called "nervous dyspepsia." He had given 8 years of his life to health-hunting; had gone to a score or two of good and famed physicians and to several scores of quacks, obediently and conscientiously carrying out the 70 odd treatments ordered until convinced of the uselessness of each. There could be no doubt of the absence of hysteria or delusion about the existence of some disease, nor of his sincerity in wishing to be rid of it. His face jerked and he could not sit or stand still a minute; his digestion was disordered, and he was plainly a sick man. I gave him spectacles, and he has been calm, healthy,

happy, hard-working, every day since. He journeys over 2,000 miles to see me whenever the eyes need a change of glasses.

A well-known oculist of Boston, Dr. Greenwood, writes me concerning such cases of dyspepsia, that he treated "a young lady who had been confined to the house and mostly bedridden for five years, taking the 77 cures for what is called nervous indigestion. These 77 cures were applied by almost as many physicians, Christian Scientists, etc., until strong astigmatic glasses were prescribed, and for 20 years this young lady, now a woman grown, has had no dyspepsia, or any need of cures." Insomnia kills as many, perhaps, as homicide.

A member of our Society sent me a man who had been treated for a long time by the chief consultants of a big city for high blood-pressure. As he did not get better, he was like many others, wisely sent to our beloved city by the sea, to take a rest. His age and inability to carry on his important and onerous business leads to the supposition that the advice was based on the theory that cure was really impossible and that he should be "laid on the shelf," until the successful therapist Death should come. One eye pointed already towards the sky and the other towards the earth. I finally ordered a weird pair of spectacles. At once the blood-pressure dropped about 10 per week until instead of 220 it was about 160 and the man went back to work, well, and has been well ever since.

One of your esteemed fellow-citizens had for years been consulting the best experts, ten of them, I think he said, in another city because of chronic asthma. Finally he despaired, and treated himself by smoking cubebs, and by missing professional work, and by other devices well known of such patients. He has not missed a day from his exacting business since I gave him spectacles.

Little E. R., 6 years old, of our city, the school teacher said, was deficient mentally and was way behind his classes. He could not see the blackboard until he went close up to it. He held his book close to his eyes. He slept poorly, had a poor appetite, and he was "so stupid" that he could not memorize, or answer questions, etc. Before getting my glasses he had only about 10/200 vision. Within a few months he

had nearly perfect vision with his glasses, and had passed two grades in school, was bright, natural, healthy. The civilized world over, the rate of child-suicides is exactly proportionate to the number of hours of school-work and study per week. It is greatest in Saxony.

A trained nurse, and a good one, had long had migraine, with stomach trouble, indigestion, flatulence, nervous symptoms, blepharitis, etc., and weighed less than 100 pounds. She was soon rid of these symptoms, and has sent me many patients since.

Few workmen need accurate and peculiar glasses correcting presbyopia, etc., so much as barbers. One, 51 years of age, had been running down in health, with pain in neck, over eyes, headaches, sickness of stomach, vomiting, etc. He had been beglassed, and drugged in vain, was convinced that he had tuberculosis, and that for him "the game was about up." With peculiar lenses and making of "barber-spectacles," I have designed, all symptoms vanished, and he is healthy and hopeful and working hard.

I show you herewith a letter from an English lady, and ask you to notice what beautiful handwriting it is. Well, the marked words read as follows:—"This page is written with the good eye covered, so you may see the difference. I never expected the bad eye to be of the slightest use." The opposite page is not better nor of different chirography. It is really remarkable that a practically blind eye will, sometimes, retain the hunger for and possibility of perfect vision for 70 years. It is most rarely so, I must confess.

A girl of our city came to me in 1912, with a diagnosis of "kidney trouble," made some years previously. Another consultant later found no evidence whatever of nephritis. But with other symptoms the pain under the shoulder blades kept up. She weighed about 100 pounds, was very thin, and ate little. I noticed at once a high degree of spinal curvature; the optic discs were cupped, and she was left-eyed. In six months she became well nourished, of normal weight, was eating well, happy, and was right eyed, the curvature better. "Neuritis" is usually the consequence of eyestrain.

Even at 68, the relief of migraine, i. e., dyspepsia, dizziness, headaches, insomnia, etc., is sometimes possible, although we'd

better not hold out much hope of that. C. F. N. came to me two years ago with a pitiful story of such suffering. Correct bifocals, and it is only bifocals that could have done it, have given her immediate relief. Two separate pairs instead of bifocals will never do for those over 40.

In 1912 a famous University teacher came to me wearing simple spherical lenses, and with many years of headaches, vomiting, etc., behind her. She had consulted famous oculists. The right eye had been nearly ruined, was out of function, and although right-handed she had become left-eyed, with heterophoria of the two kinds. In a little while the sick-headaches had disappeared, and she has since remained healthy and happy. The hyperphoria has disappeared. The right eye is participating in vision, but will probably never regain equality with the left. She had an unsuspected and enormous compound hyperopic astigmatism, and now the accommodation has been brought up so that at 36 years of age she no longer needs bifocals.

Twenty-three years ago a little Philadelphia boy, four years old, had "cross-eye," and his father took him to the most famous of New York ophthalmologists, who, without testing, said simply that his glasses prescribed by the Philadelphia oculist were all right; the eyes worsened for six years longer. Then the Philadelphia adviser sent the boy to a famous muscle-snipper in another city; 29 snips were made, during several years, at a cost of over \$3,000 to the poor father. The squint was then worse than ever, and the snipper said he could not cure it, nor the headaches, etc., that prevented success at school. At 15 the young man entered the university, and at 17 the law school, where he had headaches all the time. He was graduated at 20, and has been in active practice since then. In 1904 the young man came under my care; with correct lenses he was soon without any of the old troubles, the eyes straight, and each with perfect vision. I then left Philadelphia and the patient came under the care of others, until in November, 1912, he again consulted me for "terrible headaches," and vertigo. A change of glasses abolished all the symptoms. He has since remained well, but requires changes of the lenses every year. In my absence he had become left-eyed, but is now once more right-eyed.

Tenotomania is a heathenish proceeding; it neither cures the cause nor its results.

A woman of 40, living in Baltimore, came to me over two years ago complaining of dreadful headaches, all through the brain, with nausea every few weeks, all dating from childhood. Insomnia was also becoming pronounced of late. The most authoritative of oculists would not order glasses, and sent her to general physicians. She tried the most famous oculists of other cities, and they concurred in the diagnosis and advice. She was fearfully run down and plainly like thousands, lapsing into permanent invalidism and premature senility. She had seven or eight diopters of mixed astigmatism. In a month, with correct bifocal glasses, perfect vision and health was restored.

Two years ago, a literary woman, 54 years of age, had been under the care of the best oculists of her city for years. They had failed to check the stretching eyeballs—*i. e.*, rapidly increasing myopia, because they had not given her correct glasses. They finally told her she would soon be blind, and—she travelled eastwards to me. She had fifteen or sixteen diopters of compound myopic astigmatism. The progressive myopia at once, as always, under correct glasses, stopped progressing, and now remains stationary, with good working vision. She has long since resumed her literary career with comfort and success. Myopia is due to incorrect glasses.

A woman of 45, in 1912, had had headaches for over 25 years; "neuritis" of the arms 18 years ago, and since whenever tired; nausea and vomiting; and she had had at least 100 swooning or fainting attacks, each lasting about 15 minutes. These symptoms were all cured by astigmatic lenses. Two months later she left her glasses off for a day and at once was seized with the old warning, old-fashioned sick-headache. I could report thousands of similar cases.

The professor of chemistry in a distant university had with my glasses been free from all morbid systemic or ocular symptoms for many years. He lived several hundred miles away, and had been to see me a few months previous to telegraphing me that suddenly he was having frightful trouble with head, health, and one eye. I telegraphed that he'd better come at once,

unless he could explain in some way the sudden trouble. In a minute after he arrived I said: "Last Thursday this left lens became loose and dropped out, and an optician-jeweler reinserted it?" "Yes, how did you find that out?" "Because the jeweler replaced it upside down and, thus reversed your 40° axis of astigmatism." In another minute it was put properly in the frame, and the return journey of some 400 miles was undertaken. The jeweler—well, let us not talk of him! The patient now knows what is the nature of astigmatism.

The wife of one of America's well-known surgeons had not consulted me for seven years, and of late had been in poor general health, with great and increasing suffering, headache, "gastric crisis" lasting two weeks, burning pain in epigastrium, loss of appetite, and other symptoms of eyestrain. She was 57 years old, and had needed changes of glasses for at least five years. But from bitter experience she preferred to wait rather than consult others. Every symptom disappeared. A thousand-mile journey is cheaper than illness.

Ten years ago a patient was brought to me who had several times attempted suicide; he had to be watched all the time by friends or relatives to prevent him from cutting his throat, etc. He was a highly religious man, a preacher, in fact. I gave him glasses and the suicidal impulse vanished until with wrong glasses ordered by other oculists it returned three years ago. I rechecked his unsymmetric astigmatism and he is now a happy man and successful in his church work. I have had a number of such cases; one, a professor in a western university had nearly succeeded in cutting his throat, and another time by gas which he let run in his room. He was at once made well, and loving life, by my glasses, and is now happy in his professorship. A discriminating reader will find eyestrain at the heart of at least one-third of the newspaper reports of suicide. Dr. Pronger of England reports five demonstrated cases in his practice, traceable to the insomnia of eyestrain.

I have perhaps thousands of such clippings as the following, cut from the *New York Times* of yesterday. The woman jumped down the shaft of Washington Monument, a fall of 500 feet:

Mrs. C. was happily married, beloved,

but nervous-breakdowned and insomniac. She "had sought relief from several prominent physicians." She left notes to those she loved, and by whom she was beloved, saying:

"I know I can never get well; I am a burden to you as I am. This is the only way out, etc."

The same day was a report of a man in Philadelphia, headed, "Fearing blindness man ends his life."

Two years ago a young man, during his last year at college, found himself unable to study and to keep up with his class. He was engaged to take up a responsible position immediately after being graduated; but he was so far behind that within six months he could not hope to pass his finals. He was brought to me and I found that his headaches, inflamed eyes, etc., and poor vision, were due to the fact that his oculist had ordered full mydriatic-correction lenses. So that the poor ciliary muscle was tormented and tormenting. It was given its proper function and the young man was soon the equal of his mates, was graduated, and is now happy at his big business job.

A woman of marvelous energy and activity, an enormous worker, had, at the age of 52, a high compound hyperopic astigmatism, which for years was imperfectly corrected by her old glasses. To this misfortune was added the usual switching of the axes in presbyopia together with undercorrection of presbyopia, so that the strain of the eyes and the nervous system, required as many as four refraction-rests a year with changes of glasses, made with meticulous labor, to keep her able to do her tasks. At last freedom from all troubles has come and the unsymmetric astigmatism is normally constant.

Dr. Oliver of Philadelphia once reported a case of severe deritis due to eyestrain. Whenever the glasses were not worn there was the skin disease, but disappearing at once when they were resumed. One of my patients had an equally conclusive experience: whenever her glasses were broken she was compelled to live in her bathtub constantly until they were repaired.

A woman of 63, a confirmed invalid, was given correction of her unsymmetrical astigmatism, and at once gained 40 pounds, with return of good health, etc., but she was vain and quit using the glasses,

and relapsed into permanently bed-ridden invalidism, with one eye thrown entirely out of use. Her condition has grown steadily worse. Vanity and folly still exist in the world, and they are frequently patients and next door neighbors.

Ten months ago, a woman of our city, according to the reports of herself and friends, was "nearly going crazy" with 20 years of violent headaches, vomiting, nervous prostration, and the usual string of such symptoms. Perfect health came in a month or two with adequate correction of her ametropia.

One of the most striking cases I have had was that of a woman of a large city who was of the greatest importance as an expert in the office of a high public official. She was a year ago steadily growing semi-insane, the bodily suffering as great, the nervous system threatening collapse, nervous prostration, and much more of the sort. She was ordered to come to me by her superior officer. She had 5 or 6 diopters of hyperopic astigmatism, and only one eye in use, with 23 of esophoria, and 5 of hyperphoria. She is now sane, sound, and splendidly efficient, both eyes perfect and united in function—all simply by means of a year's wearing of right glasses. But it was a job I hope never to be put to again. "Fatigue" and "fatigue-poisoning" by the products of work strain, are the silly philosophies of fashionable "science." Such philosophies are most fatiguing—to others than the climbers. Nothing is thereby explained and nothing done, for the suffering ones.

As an example of psychic reflexes a consulting engineer of public works in Canada came to me seven years ago with no physical or systemic complaint. He had 5 or 6 diopters of myopia, and as many of unsymmetrical astigmatism, making a total of nearly 12 diopters of the worst and most blinding sort of a defect—a sorry affair for an engineer. Only about half of this defect had been met by his glasses. His was just the required shape of the eyeball "to raise the Old Harry" with a man's mind. He had long had increasing "mental confusion," "inability to concentrate attention" on any subject, and everything seen or thought of "seemed as in a dream." Everything was intensely unnatural. The ontogeny came up against the phylogeny with a won-

derful contradiction, or before a gulf. Every act and word of the man was frightfully slow and labored. The mind could not long bear such an unnatural strain. It was a painful and exactly long struggle to reach a true decision as to his ametropia. He comes often nearly a thousand miles to enable him to carry on his work.

Miss C. B. began having headache, thumping in head, nausea, etc., seven years ago, synchronous with putting on glasses that were twice too strong. At once with correct lenses a year ago all symptoms permanently disappeared. She has gained in flesh and is the picture of health.

I speak now of an example of unusual and multiform reflexes, the case of Mrs. Z., aged 28. At 23 she left her old glasses off and in a week she woke up one morning with eyes crossed and blurred; power to walk or move the body was lost for a week or two. Ever since, the vision of her left eye has been practically nil. There was erythema of the whole body, which was purplish and blackish. She was a "nervous wreck." She lost her voice for a time, and there was a numbness of the knees, legs, and feet which were almost without power. Later she had fainting spells, nausea, "nerves," etc. The insurance company wisely refused to insure her, although no clear organic disease could be detected. The physician who sent her to me found no renal or definite disease of any organs.

Mrs. B. a year ago had had almost constant neuralgia, headaches, eye troubles, great denutrition, and nameless suffering, for 22 years, all the time wearing the worst imaginable glasses. After getting correct lenses, all her ills disappeared and she gained about 25 pounds in a month or two. Denutrition and underweight are the commonest symptoms of eyestrain.

A teacher, aged 32, had a year ago been having attacks of typical migraine (*i. e.* headaches and bilious attacks) every two weeks for ten years. She was wearing from a famous oculist the worst conceivable glasses—with 2 D. of unsymmetric astigmatism uncorrected. I spent hours of hard labor to reach a diagnosis of her ametropia. At last I have got her half-ruined eye in perfect function, and she now has not a sign of "migraine."

As a boy, Mr. K. of ———, and Dr. G., now of Atlantic City, had what was called

tuberculosis, just like thousands, perhaps millions of eyestrain patients all over the world. The boy K. was put to bed, had creosote treatment, and for 4 years the lad endured the superstitious nonsense. The boy G. endured similar follies for 20 years. Neither of us had "consumption," or if we did it was no matter, and since we could not get glasses, what we wanted was to be taken away from schools and books, into the open air at work or play. The years dragged on, and together with hosts of other victims, we had headaches, eye troubles, constipation, indigestion, pessimisms and morbidities galore, of mind and body. At 33, Mr. K. got glasses of Dr. G. that wholly cured him in a week. But Dr. G. had to wait until 35 before he could find such glasses, and in the meantime he had to leave college and several occupations, because of eyestrain, and the hideous miseries it caused, through poverty, failures, lost opportunities, sickness, slavish labor, atheism, pessimism, and more! He paid great Boston oculists all the money he could make for years for advice to get no glasses and to squirt gallons of cold water upon his eyes for hours a day. In 1885 he was enabled to study medicine by means of good glasses, and since becoming an M. D., in 1888, he has cured some 12,000 or 15,000 patients of ocular and systemic diseases due to ametropia.

An American surgeon, aged 43, came to me over a year ago from a far distant city. His repeated statement was that he had had "severe headaches every day all his life," "awful in the afternoons." He has not had the least headache since, and writes me the most adorable letters of gratitude.

Fourteen months ago, one of our city school girls, of 12 years old, was brought to me with a strabismus measuring 33 base out, and 9 B. up left, and with great denutrition, stomach trouble, indigestion, and more. Even the child's ophthalmic adviser had not advised tenotomy, "thanks be!" She had an unsymmetric astigmatism, and seemed doomed to endure the hideous deformity of such a squint, a most serious matter to parents and to the girl. Luckily the normal acuteness of vision in both eyes was still preserved, so that with pluck, patience, and cooperation, success was possible. I never worked more or with more

long-continuing perseverance than for this child's welfare. She has now two straight eyes, both in function, and health is as good as her improved looks, and of course no tenotomies were done. Tenotomies would have made cure impossible.

A New York musician, 48 years old, first "broke down" five years ago. "Broke down" means a deal to the patient, and to us doctors it has a host of disconnected significances and as many illogical names. Each doctor consulted usually treats such patients in a different way, according to many things. When I tried to get closer to the cause and nature of the breaking-downs I could not reach any definite diagnosis. They have been numerous as the years wore on. It was said to be apoplexy at first. The "spells" were very peculiar. In leading or teaching he would stop suddenly and perhaps sob and cry like a child. There was great physical depression, and the man was plainly going to the bow-wows. It is perfectly safe to say that when a patient breaks down at 42 or 43 or 44, there is one definite certain cause—presbyopia, plus astigmatism, etc. In a very little time this man was telling me and everybody that he "owed me his life and that he blessed me every minute." In our town many musicians are going down into pitiful tragedies because the tiny dots of notes they have to read with lightning-like rapidity are necessarily placed beyond the range of clear vision. And as many more become steady and unsteady drinkers because of eyestrain as because of drinking, saloons, club life, etc.

Some patients have nearly all the string of reflex eyestrain symptoms for half a lifetime. *E. g.*, a woman of 33, was sent to me 15 months ago who had been a frightful and frightened sufferer since childhood, and never well a day since 14. Headaches and constipation, excitability, intestinal and stomach trouble, demanding the strictest dieting have been constant, nervous prostration came 7 years ago—and she was "in hospital for two months." She was glassed by famous oculists without lessening even the eye symptoms, pressure, neuralgia, "neuritis" of arm, etc. Her rectum has been dilated, her appendix cut out, uterus, time and again, curetted; stomach pumped—world without end, amen! In a few

months now, her general physician reported "immeasurably better," and improvement is still going on.

A great literary woman, aged 44, came to me a year or more ago, and among other symptoms she had glaucomatous tension, +1, or higher, and the discs widely cupped; she was a sick woman, intensely "nervous," etc. Correction of her ametropia and presbyopia was followed by freedom from all symptoms; glaucoma was evidently avoided.

Mrs. J., wife of a physician, from a distant city, aged 27, had had headaches "all her life," with vertigo in later years also, "neuritis" or "neuralgia" of right arm and shoulder; pains in stomach and left sides, nausea mornings, "rusty hinge," or "creaking in atlas;" dizziness in walking up or down, "head pounds," sleepiness, etc. All these things were bitterly complained of. Every symptom disappeared completely and permanently within a week after getting glasses. Her disposition, of course, had always been bad, she was "grouchy," hard to manage, nervous and excitable, etc., etc. All this also changed, she got well, became pleasant, bland, and jovial. Bad disposition is much and often a matter of eyestrain; and also of frightful garrulity, loquaciousness, etc. "These women will talk the ears off a brass monkey" was one report. The ducking-stool for scolds, was the medieval therapeutics of eyestrain talkativeness. Our own is less effective and more cruel.

A woman, 42 years old, came to me about 7 years ago complaining of attacks of suffering—pressure, pains, and sore spot about pelvis, or appendix; she had been confined to bed often for three or four days at a time. My glasses cured these attacks completely—for four or five years, when, as I was absent, she went to another oculist, with resumption of the old symptoms, and with headache and nausea, and daily to-bed-going for 3 or 4 hours. About 2 years ago she came to me wearing incorrect lenses and no presbyopic ones, although she was 50 years of age. Correct bifocals finally abolished her symptoms. But they were off more slowly of course than when I first saw her. Cure at 50 is often a hard job.

Miss C. of Atlantic City has had a lifetime of constant headaches and has always been timid and terrified. She is now mistress of herself, confident, and serene. Con-

stipation was always severe, but now there is little or none of it. There was formerly inability to read, sew, etc., but now she uses her eyes in this way constantly, and has no headache. A life of suffering thus vanished at once; and she is well and happy, physically and psychically—"a new woman," of the right sort.

Dr. Marsh, a surgeon of Troy, N. Y., aged 50, wearing no presbyopic correction, and with atrocious distance spectacles only, was recently sent to me by Dr. C. of Philadelphia. The man had regurgitant heart murmur, dizziness, etc., and had been in a sanitarium here for three weeks with inability to walk, and with lots of horrid symptoms. All symptoms vanished in a week with the correct glasses I ordered, and, with the peculiar surgeon's operating glasses I have devised, he has been healthy since, busy, successful, happy, and sends me lots of patients from his distant city.

One of these was Mr. A. A. M., 45 years old, who had sick-headaches from 12 to 18 but none thereafter. Four years ago began general weakness, mental fog or obfuscation, stomach trouble, fullness of head and pressure at vertex. Walking required a strong effort to make his feet move; even the hands demanded forcing to make them work. The common "all-gone" or "all-in" depression was decided; he was "run down" and general failure of health, inability to work, etc., were noticeable. Any use of the eyes made the symptoms worse. I found him right-handed, but left-eyed, noteworthy, taken in conjunction with the fact that his error of refraction in the right eye was about double that of the left. He had an operation recently for hernia. I prescribed bifocal glasses for his compound hyperopic unsymmetrical astigmatism, and all the above symptoms vanished and he has remained healthy and vigorous in mind and body since.

Four months ago, a lady 43 years old, of our city came to me with these complaints:—Headaches since she was a little child; throat trouble also, and always catching cold; nausea and vomiting since she was a grown-up, and the vomiting attacks dreadful of late; neuritis of knees and hips, also in arms and shoulders; in bed much of the time the last two years, unable to turn head or use the left arm; feet lately swollen, inflamed, red, so that

she can't bear weight on them; eye suffering, for which glasses have been twice ordered; weighs 111 pounds now, formerly 135 pounds. In three weeks after bifocal glasses were ordered she reported:—No headaches, no vomiting, no neuritis, feet healthy; has great hunger, "eating all the time"; gaining flesh; well and happy.

Six weeks ago a man was forced to come to my office by his general physician: he showed the signs of the most severe eyestrain in his eyes, manner, walk, mental unsoundness, etc. I went so far as to demonstrate the existence of a high and uncorrected ametropia, which was plainly driving him into mental disease of a pronounced type. I begged him to let me prescribe glasses, instead of wearing those he had. He would not do it and went away. I then telephoned his general physician to bring him to see me, because I was sure, and told Dr. S.—— so, that the fellow would be insane, hopelessly so, within a very short time, if his eyestrain were not neutralized. He came but all our efforts were in vain. His mind was so clouded already that, although he had been repeatedly told there would be no charge, he said my physician friend was only after the "divvy" I should give him. In a few weeks this poor fellow was sent to an asylum, wholly insane. I think that fully 50 per cent. of our insane are so primarily or secondarily from eyestrain. Migraine is a great mind disorganizer.

In Germany astigmatism, hyperopia, and anisometropia are not corrected, and accurately kept statistics for many years demonstrate that 60 per cent. of University students there are myopic. And yet every child in the world is born hyperopic. Myopia is due solely to uncorrected hyperopia and astigmatism. In our country where these defects are somewhat better corrected the percentage of myopes among our young college men is only about 8. No young person need ever become a myope. No myope or ametrope can ever in the long run excel in games, such as baseball, billiards, war, and life. If you can't see beyond arm's length, the handicap is enormous, and life-failure is inevitable. But the ordinary kinds of opticians' glasses usually increase myopia.

A woman 60 years of age came to me last week, who for 50 years has suffered al-

most every day with fainting or swooning attacks. Headache and sick-headache, with vomiting, began at ten. The school superintendent and physicians had said she was frail and should not go to school. At 15 her hair was white. At this age also she was put at the one occupation which should not have been chosen—dressmaking. Up to 35 the headache and vomiting and all the usual attendant and sequent symptoms, kept up every few days at least. Why they should have slightly lessened then I cannot understand. She has been attended by 28 different physicians, without relief, she says, at any time. The diagnoses have been many and varied—disease of the gall-duct, of the liver, of the stomach, appendicitis, grippe, nerves, nerves, nerves, cystitis, etc. And the treatments as varied! She has spent five months in one sanitarium, and lesser terms in others. Stomach washings were more or less the rule. All the money the family could raise has been spent in seeking cure. At sixty one may not promise anything, but one must always hope and encourage. The God of loving and rational therapeutics is very kind, and physiology is always waiting a little touch of help, especially if text-book and professional pathology will not intrude.

Years ago the wife of a good physician over in Virginia, had, she said, suffered as much as did ever any woman from what had been called "pelvic and womb-trouble," and for several years she had been operated upon a number of times, and all sorts of local treatments had been tried. Sanitariums had been ordered, and while at one she got a suggestion from a fellow-patient that "it might be eyes." She packed her trunk, and left it at the sanitarium until she could return, and came some 400 miles to see me. In two or three days she telegraphed for her trunk, and went home well. She has not had an hour of suffering since. Her husband then quit general practice and studied ophthalmology in which speciality he is now successful. I have recently received a letter from Mrs. S. from which I quote:

"I wish some more of us could write books. I have to take mine out in recounting it with my lips. Just the other day I was telling again that wonderful sanitarium experience, where I heard of you, when I couldn't support my neck. . . . But for

your glasses, which I am still wearing (and the only ones I ever could) I would just lay down, and pray to *die*. I couldn't live without them. I simply couldn't make the fight. And that is why there is a gratitude in my heart that will never die."

The symptom-complex called hysteria or neurasthenia, or by a score of such names, is usually of ocular origin.

As to senile cataract, I could have brought many reports of cases proving that it is caused by eyestrain, and that while the duty of ophthalmic surgeons is to operate when the old neglected cases come, the greater duty is that of prevention by spreading the knowledge that the disease is avoidable. It is all simply another instance of the old, old truth we keep forgetting that morbid function produces organic disease. Nothing can be more certain than that ametropia, or eyestrain, produces morbid ocular function every second of the patient's waking life. I have never known a patient to develop cataract while under my care.

More than this, I am equally certain, even more so, that senile cataract may be stopped in the so-called "ripening" process by scientific spectacles. I have noted this in a number of my cases. For example, Mr. S. of Elizabeth, N. J., over 65 years of age, and a poor man, was 14 years ago about to give up his occupation as a book-keeper in New York City, because of progressive clouding of lenses and vision; his acuity was hardly 20-30. Bifocal glasses permitted continuance of his work for ten years, when he died of general disease. Mr. C. of La Salle, Ill., aged 72, a busy accountant, came to me two years ago with cataracts, diplopia, and lessened acuity of vision. He was greatly worried because of the danger of coming blindness while still active in mind and body, and the fear that he would have to resign his position. I prescribed bifocal spectacles for his compound hyperopic astigmatism and for his esophoria, special ones for desk-work, and for golfing. For his discouragement I prescribed a comforting dose of assurance that with correct spectacles the cataracts would not ripen. By and by he wrote that, "eyes are greatly improved. Bifocal glasses are a great revelation to me," (he had never heard of such things before), "both eyes are in use, and I am doing all my work without any trouble. My general health is very much

better." A year or more after his first visit he made the journey again to see me. He had gained 14 pounds. I made changes in all his lenses because his vision had so much bettered in sharpness that he could answer more accurately in testing. A letter dated Feb. 21, 1915, says: "Glasses have given me perfect service and my eyes are *very much better*. I am at my desk and have been exceedingly busy."

I have a patient aged 80 whose cataracts are being kept stationary.

How much that has been called "gout" and "rheumatism" was not diagnosed correctly, one can never know. A deal of it has been called "neuritis," and yet in my experience this neuritis is curable by scientific glasses; at least in all the patients I have seen. A woman of Philadelphia came to me last summer giving a long and pathetic history of ordinary migrainic symptoms. Several months later she came in radiantly saying that these last with my glasses had vanished. Then she naively added that she had never told me of her worst symptom, because she thought, of course, that it could not possibly be due to eyes,—*"The toes are so very far away, you know."* This symptom was for many years atrocious pain in her toes, and especially in the big toes. It was *"worse than all her other symptoms put together."* *"And how are the toes now?"* I asked. *"Not a bit of pain now."* *"Well, the next time you must tell your doctors every one of your symptoms. The real causes of diseases are usually subtle and hard to make out."*

In spite of this lesson I still believe that these toe-pains are usually caused by too small and ill-fitting or ill-made shoes. Surely a lot of talipedic turning, in or out, of ankles is caused by the popular silly shoeing, and another lot by lateral spinal curvatures, with resultant lopsided pelvis.

Lastly, no glasses are sometimes better than any glasses whatever. Without plan of thought of the indirect result, I have often found with new patients that no glasses were needed, and by ordering the old glasses off, and refusing to prescribe new ones myself, I have been surprised by the resultant cures of eyestrain.

A hint as to what is going on abroad comes from a patient who has gone as a University lecturer to Scotland. I quote from a recent letter saying:

"It grieves me to see how people misuse their eyes here. Firstly, they sew and read in the long dim twilight; then, for the sake of the warmth from their open fires, they face both the fire and the all-too-poor light from a gas jet above it. They wear abominably misfitting spectacles at all possible angles except the right one; their children sit in a corner far from the light to study; and I never saw so many, both of children and adults, with strabismus."

What ophthalmological barbarism this exposes! And it is worse in the rest of the world; except in our own country where it is a little better. Scarcely one correct or therapeutic pair of glasses is to be found in any part of the world except in the United States; from Canada a dozen or two patients have come across the border to get such.

MODIFIED SERIAL "ROENTGEN EXPLORATION OF PYLORUS AND DUODENUM."¹

BY

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When A. Howard Pirie of Montreal, at the last American Roentgen Ray Society meeting, presented his cinematographic technic for serial sectional views of the functioning stomach, it impressed me that he had simplified a hitherto complicated operation and developed a method of examination with far reaching possibilities. The masterly pioneer work of Cole of New York and George of Boston with many others, in their painstaking and scientific studies, both on the normal and diseased organs, was a stimulus no doubt to Pirie's contribution.

Following the latter's ideas the writer constructed a table and attempted to com-

bine a horizontal fluoroscope with Pirie's plate changing device, making the exposures from below, and at the same time enjoy a fluoroscopic image of the procedure. This attempt was a complete failure, and is mentioned merely to save time and expense to those who are experimenting along this line.

A little thought will show the mechanical difficulty of causing the duodenal bulb to fill with patient on back, and when turned around on stomach, the distance between plate and bulb is so great as to distort the resultant image to a size beyond the narrow confines of the allotted space on plate.

Reverting to Pirie's original plan, a new table was constructed, reversing my first attempt, and the plates made thereupon have been so satisfactory from a diagnostic standpoint, that I take the liberty to bring this matter more concretely to your attention.

The technic consists of making 16 exposures, of a bismuth filled stomach upon a 14x17 inch plate, each section taken comprising a rectangle, 3½x4½ inches, which is space sufficient to include the pyloric end of stomach, and the first and second parts of duodenum. On our first plates the exposures were made in rapid succession, that is all 16 imprints taken as quickly as possible, allowing the patient only 3-one second pauses for breathing during the seance, the whole process consuming 20 seconds' time. After a little reflection it seemed better to discontinue this practice and adopt a uniform standardized technic, which will be described briefly.

Accepting Cole's and George's dictum that a constant or fixed deformity of the duodenal bulb points to actual pathology, and believing fully that it is impossible except in an exceedingly limited number of pa-

¹Presented before the Los Angeles County Medical Society, April, 1915.



Fig. 1. Normal Stomach and Duodenal Bulb or Cap.

B—Duodenal Bulb.

S—Pyloric Sphincter.

P—Pylorus.

T. W.—Terminal contraction wave.



Fig. 2. Deformity of Bulb due to Adhesions from Gall-bladder Region.

- B—Duodenal Bulb.
D—Deformity due to Adhesions.
S—Pyloric Sphincter.
P—Pylorus.
D. D.—Descending Duodenum.



Fig. 3. Deformity of Pylorus due to Hyperperistalsis. Note gaping Sphincter.

- B—Duodenal Bulb.
- S—Open Sphincter.
- P—Pylorus.
- T. W.—Terminal wave.
- D. D.—Descending duodenum.

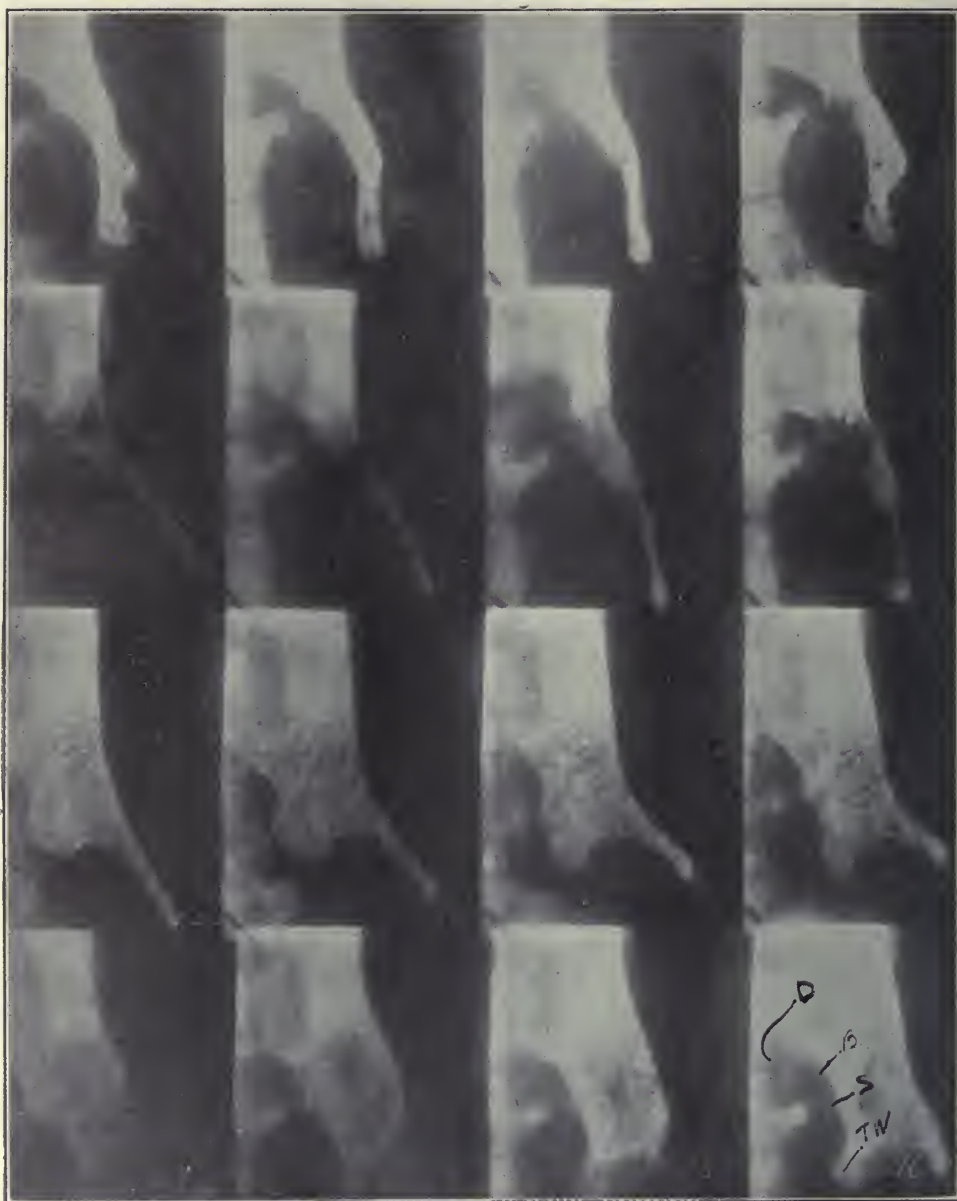


Fig. 4. Duodenal Ulcer showing constant deformity of Bulb.

D—Deformity.

B—Bulb.

S—Sphincter.

T. W.—Terminal wave.

P—Pylorus.

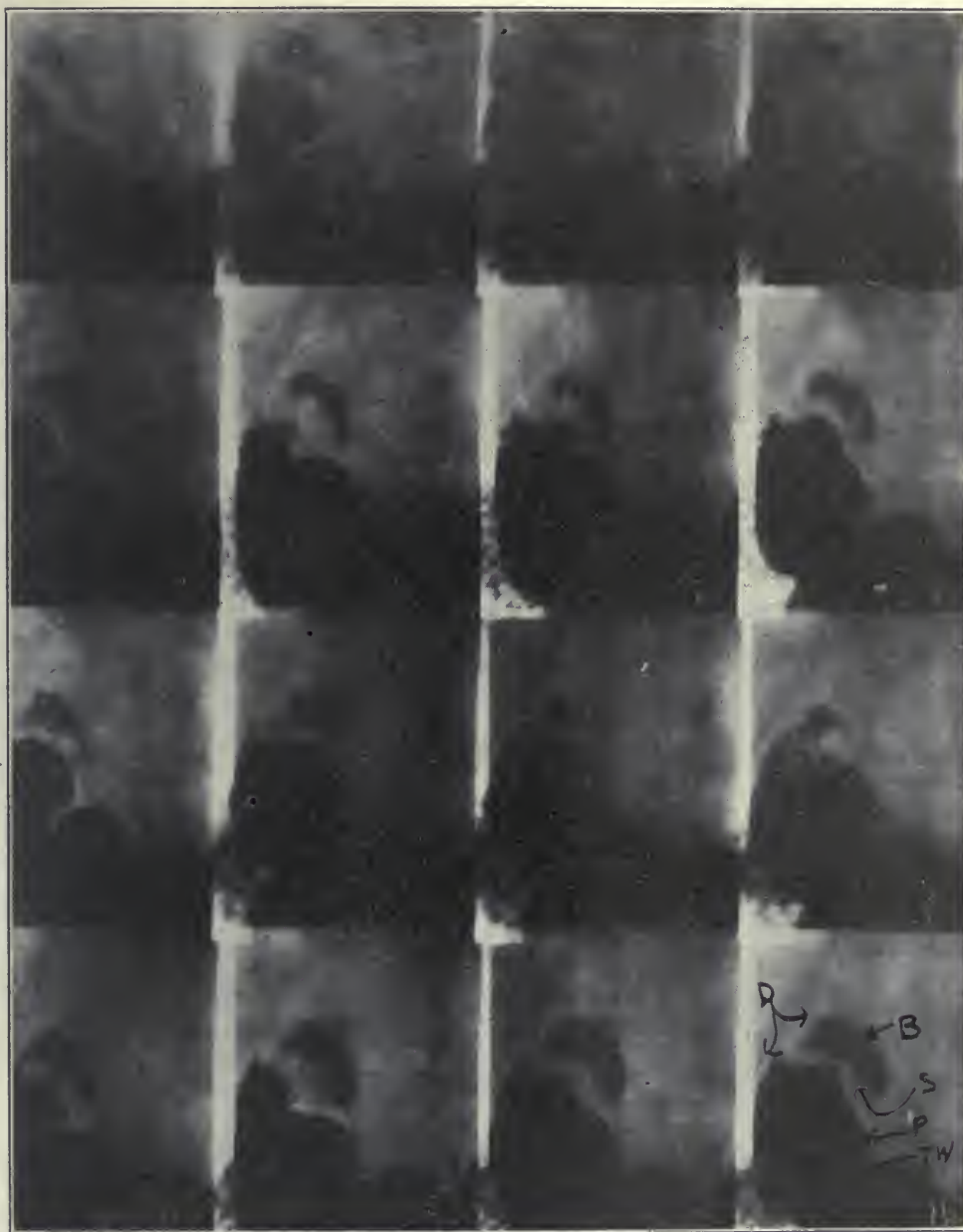


Fig. 5. Extensive Pyloric and Duodenal Ulcer.

D—Deformities.
B—Duodenal Bulb.
S—Sphincter.
P—Pylorus.
T. W.—Terminal wave.

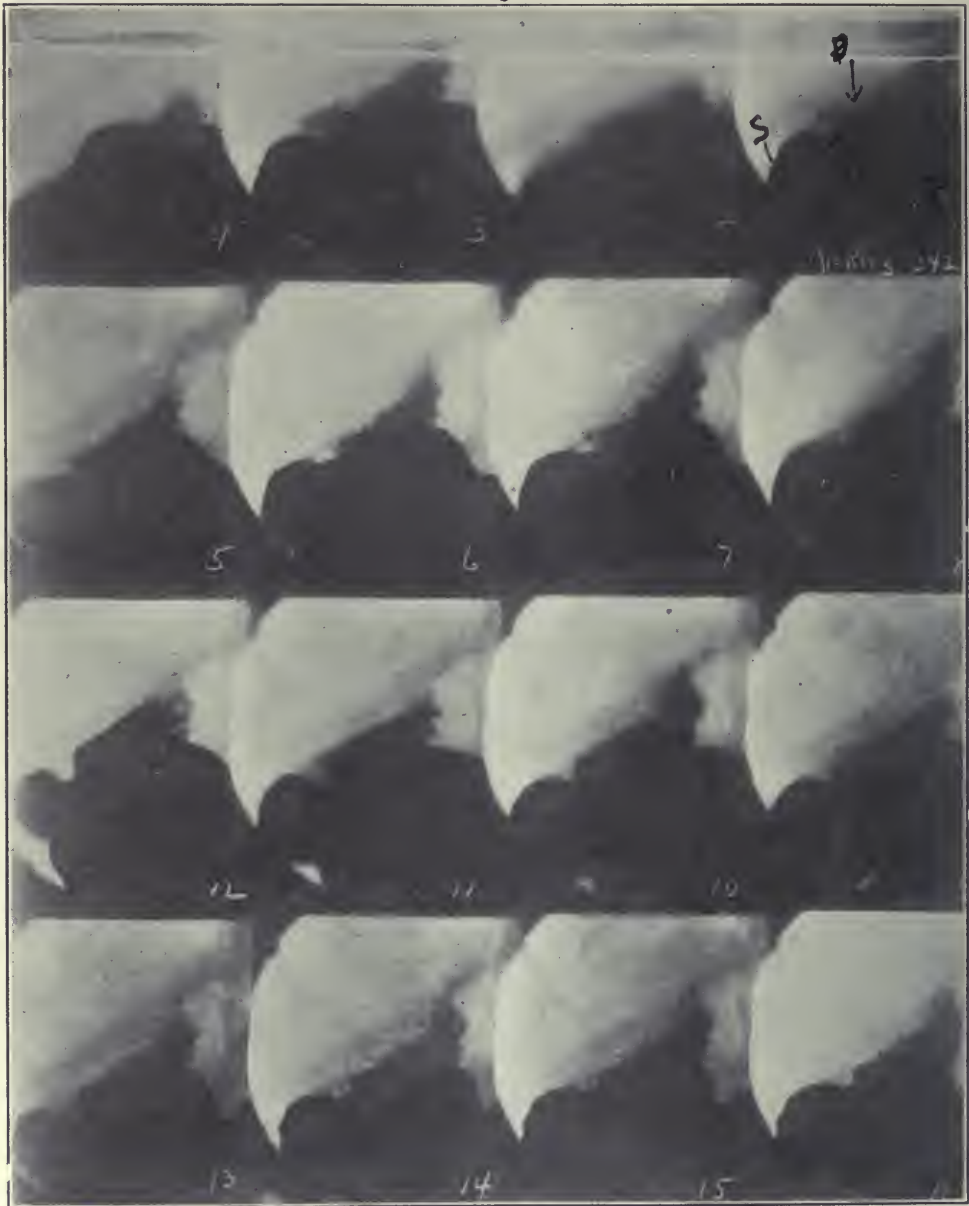


Fig. 6. Absence of Duodenal Bulb and Deformity of Pylorus due to Carcinoma.

D—Deformity.

S—Sphincter.

P—Pylorus.

T. W.—Terminal wave.

tients to visualize by means of the fluorescent screen, pyloric or duodenal ulcer, the rationale of doing the "16 to 1," or limited serial section exposures becomes apparent.

The writer believes thoroughly in the value of the following technic and trusts that it may be found acceptable. We will take it for granted that the average stomach consumes 30 seconds' time in completing a wave cycle, that is a peristaltic contraction wave moves from the fundus to the pylorus in about 30 seconds. Bearing in mind that our object is to ascertain if a fixed deformity exists, and that we want to rule out spasm, postural irregularities, and temporary filling defects from any cause, we place the patient on the table prone, center over the area desired, visualize the pylorus and when the bulb is seen to fill, quickly slide plate into position.

Four exposures are now made while patient holds his breath, then 30 seconds' breathing period allowed after which 4 more are taken. This is repeated in same ratio, until all 16 views are made, thus allowing time for at least 3 complete wave cycles to mature, under the combined exposure. If on a plate made after this formula, a distinct and persistent deformity occurs in each set of fours, then I believe with Cole, George and others, that here we can rule out all artifacts, and that we have definite pathology, the correct interpretation of which will be found in harmony with existing clinical findings.

As this method of investigation becomes more common, there will no doubt develop better and more exact modifications of the foregoing technic. One may use smaller plates dividing them into as many $3\frac{1}{2} \times 4\frac{1}{4}$ inch squares as possible, or as we do frequently make four $7 \times 8\frac{1}{2}$ inch views on a 14×17 plate, when 16 views are not desired.

This space usually accommodates the entire stomach of an ordinary individual.

Great care must be exercised in rendering a positive diagnosis in any case, unless the Roentgen findings are so conclusive as to be unquestioned. There are a number of borderline conditions between pure spasm, stenosis, adhesions, abrasions, fissures and superficial ulcer, in which the Roentgen findings alone are insufficient, and as I have urged in former communications these cases should all be carefully worked out in conjunction with the internist or clinician.

Quite different and characteristic is the Roentgen appearance of a definite ulcer, or a carcinoma, or the distortion produced by fixed adhesions, and it is in this group of cases that the technic outlined is of singular value.

For the purpose of elucidation the plates accompanying this brief monograph are divided into six groups. 1 normal, 2 adhesions, 3 pyloric deformity, 4 and 5 ulcer and 6 carcinoma, the foot note under each plate covering the points of interest.

Compound Tincture of Benzoin (Friar's balsam) will form a protective film on mucous membranes and moist surfaces, just as collodion does on the dry skin. It is useful in coating fissures and protecting other wounds of the mouth or anus.—*Am. Jour. of Surgery.*

Lime in the Eye.—Do not stop to remove the lime, but quickly drop into the eye a little water to which has been added an equal quantity of vinegar or lemon juice. Do not wait to reach a surgeon, otherwise the eye may be seriously damaged. The lime must be neutralized at once. Even then the ulcers will likely be several days healing.—*Health and Temperance.*

A URINARY TEST FOR PREGNANCY.

BY

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That foreign protein compounds when used per os, or injected subcutaneously, even in minute traces have frequently caused by their toxic-end products a serious, if not fatal result, and besides have produced in many instances various diseases, can no longer be denied, with the present clinical and biological evidence at hand. The so-called anaphylaxis occasionally met in the use of diphtheritic antitoxin is but one example of the effects of foreign protein products and enzymes.

Even years ago (1898) Belfante and Carboni, later Weinland, Biedl, Kraus and Abderhalden, stated the fact that blood and serum will produce specific proteolytic enzymes which act in conjunction with the leucocytic power of the blood and manifest themselves by assimilating or destroying the foreign decomposed protein.

Based on this principle we can easily determine certain normal or diseased conditions due to the cytolytic and specific catalyzing processes of the individual, such as in pregnancy, cancer, etc.

In former papers we have published our research experience with regard to cancer and syphilis. There we have found the fact that the cytotblastema has been chemically decomposed to basic compounds and that the acid radicals such as sulphur in cancer and phosphorus in syphilis are the most predominant factors of the two menaces of mankind, thus showing that the formation is a protoplasmatic and the latter a nucleolus disease.

In pregnancy we have even a more complicated chemical reaction, since the alkalis—and especially the alkali earth—are in combination with the above mentioned acid radicals and equally fundamentally important.

We have previously stated the fact, which has been the basis of all our research, that oxidation was the normal vitalizing principle and when disease is present either

an excess or an insufficient amount of oxygen is consumed in the cell dynamics or metabolism of the human system. (Hyperoxidation and suboxidation).

As a conclusion from these facts we have been able to trace by a further chemical reaction that in pregnancy the most oxygen is absorbed by the newly formed body cells, while a reduced oxidation is present in the mother system shown especially in the blood iron content and bearing some important relation to the liver and especially the spleen.

We, therefore, have used our "Iron Reagent" (published in the *N. Y. Medicinische Monatschrift*, August, 1912). This reagent has been formerly used by us for several important chemical tests and also to demonstrate the blood heat with colloidal iron and oxygen.

To justify and elaborately explain the extensive use of this reagent would fill the pages of this article and we simply will describe or republish the ingredient of the reagent with a slight modification to make it more sensitive as a test for pregnancy.

Iron Reagent.—To 1 gr. of ferrous sulphate (green vitriol) $\text{Fe SO}_4 + 7\text{H}_2\text{O}$ is added 2 cc. of distilled water and further 10 to 15 cc. of a 3 per cent. hydrogen peroxide sol. H_2O_2 .

The mixture immediately assumes a reddish brown coloration and a stream of oxygen and ozone $\text{O}_2 + \text{O}_3$ evolves. After the evolution of gas has subsided, add an equal volume of glycerine 1.25 sp. gr., which after being thoroughly mixed finishes the reagent and it is ready for use.

Resumé of the Reagent.—1 gr. ferrous sulphate, 2cc. distilled water, 10-15 cc. hydrogen peroxide 3 per cent. solution, equal volume of glycerine 1.25 sp. gr.

Method of Pregnancy Test.—To 4 cc. of of urine to be tested is added 1 to 2 cc. of the iron reagent and an equal volume of strong hydrochloric acid HCl sp. gr. 1.19.

A normal non-pregnant urine should be used as a comparative test and color standard.

Pregnant urine gives canary yellow coloration. *Normal urine*, reddish brown or dark orange coloration.

The following are several chemical reactions which will confirm and check off the above very simple, but accurate pregnancy tests.

Check Test.

1. A check test should be made with two samples of urine, normal and pregnant. To 4 cc. of urine is added 4 cc. of a 0.35 per cent. copper sulphate solution and 2 cc. of a 10 per cent. sol. of sod. hydrate.

Normal urine after being shaken assumes normal yellow color. Pregnant urine after being shaken assumes blue or purplish coloration.

2. Another test can be made to assure pregnancy: to 1 or 2 cc. of urine is added a Benzidinseleno-acetate solution $\frac{1}{2}$ cc. This solution is made up as follows:

To 25 cc. of glacial acetic acid is added 0.8 Benzidin and a $\frac{1}{2}$ cc. of a 5 per cent. selenous acid aqueous and heated until a green solution is obtained. A $\frac{1}{2}$ cc. of this reagent is used for 1 to 2 cc. of urine.

Result: Normal urine, heavy ppt.

Pregnant urine, clear, no ppt.

These simple tests of the urine which are chemical, are therefore particularly accurate. Such a simple test for pregnancy made from the urine should be welcomed by the profession. We wish again to emphasize the fact that all these new tests of the urine should be more considered and used.

The following tests have been previously published: *Syphilis Test*, See *Amer. Med.*, April, 1915.

Malignant Test: See *N. Y. Post Graduate Jour.*, August, 1914.

Useful Urinary Tests: See *N. Y. Post Graduate Jour.*, September, 1914.

NOTE.—For dark colored or old urine a repeated filtration with animal charcoal or a mixture of kaolin and charcoal should be used. This filtration is then treated with reagent as stated above. To test for cancer or syphilis as above, the urine should be first filtered with a 20 per cent. solution of lead acetate to obtain accurate results.

Earache.—Mullein oil has been highly recommended for earache and incipient deafness. A few drops on cotton, applied in the usual way, is a simple mode of treatment. Administered internally in 2- to 4-drop doses, it is claimed to cure "bed-wetting" and dispel the burning feeling and urgency of frequent urinating.—*Med. Brief.*

THE PHYSICAL AND MENTAL ADVANTAGES TO BE DERIVED FROM A SHORT PERIOD OF COMPULSORY MILITARY TRAINING IN THE UNITED STATES.

BY

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Now that the interest of the public has been aroused to the question of a proper preparation for the military and naval defense of the United States, it seems advisable to discuss from the standpoint of the doctor, the individual advantages which might be derived from systematic military service in this country.

That the term of compulsory service should be of a relatively short duration would appear to be entirely obvious, since it should never be the object of such training in America to educate an army for aggression, or for other than purely defensive purposes. It would also seem that our already established and excellent academies at West Point and Annapolis are sufficient for the education of our professional soldiers and sailors. Our needs in this respect can perhaps be most aptly compared with those of Switzerland.

From the view-point of the medical man however, the chief questions which arise are those which effect the interests of the individual boy and the problem for the physician to consider is, is it for the best personal interests of the young American to receive a brief military or naval training?

It is true that already in certain colleges a certain semblance of military training is provided, but as yet, except in a few excellent military schools, this part of the course

is very superficial and considered therefore a bore by the student, while it receives very scant attention or support from the faculty. Concentration has become the keynote in modern education and it would appear desirable, if the matter is at all worth considering, that it should be done independently of colleges or universities, and instead of being supervised by a half interested, improperly prepared and often entirely disinterested, even adverse faculty, such instructions should be conducted under proper military authority and by a faculty purely military, or naval, as the case may be.

Judging from the excellent military results attained in Switzerland, which certainly cannot be accused of "militarism," a six months' period of service with the colors should be sufficient also for our natural needs in this respect.

As a nation we are now putting great stress on the proper athletic training of our young men, not only of college students but in settlement work, in industrial communities and even in church organizations. If a temperate and proper athletic training is really worth while, how else can it be more effectively developed than by military training and exercises? Certainly there can be no better physical education than is afforded by such opportunities as these carefully regulated and closely supervised methods. In addition to the personal physical advantages to be derived by each young citizen from a six months' training, one must also consider as a definite asset, the improved appearance which results from a proper military carriage and "set up." Very much more than these are the lessons in hygiene which are inculcated as a part of such a training. The proper care and respect for every portion of the body are among the most elemental lessons of the recruit and

they last him through all after life as the most valuable rules by which to live. Regularity of life, of sleep, of recreation and a proper balance of mental and physical exercise with rest are primitive requirements in military training. The care of the feet, of the skin, proper bathing, the preparation and selection of foods and clothing are taught in the most direct possible manner, while the proper hygienic care of camp and barracks, which are but enlarged and complicated households, are taught by practical methods. Proper control of the body is nowhere better nor more effectively taught than by the setting up exercises, the manual of arms and the other physical training received in the everyday school of the infantryman or cavalryman.

Six months of healthy outdoor life during the formative period of any young man's life is a definite life insurance investment and at the same time much knowledge of very real value is furnished in preparation for any subsequent vocation. The methods of outdoor life, of camping, camp cookery and hygiene become matters of intuition. Transportation problems, the care and management of horses or of the newer machinery of transportation, the requisitioning and handling of large amounts of supplies are all very important and essential matters of direct value in any business or professional life. For the city boy a knowledge of rural conditions is provided and for the country boy, close association with the city dweller, and for all a leveling of social cast and the establishment of a standard of virile manhood, which breeds mutual respect and understanding. A military encampment is the ideal social settlement for growing young men. The use of explosives and firearms under proper supervision and instruction is the most positive safeguard against after

carelessness or ignorant handling of such dangerous materials, and the pleasure of rifle or pistol practice, as those of us who have indulged in it are well aware, are among the most delightful and elevating of sports. There is no room for tobacco or alcoholic tremors or for dissipation of any sort for those who would excel in these capital sports.

The testimony of those who have received a military training, either in the regular service or the organized militia is universally in favor of the schooling, and a comparison of our young men mentally or physically with those of like social status who have received the benefit of a military education is a convincing argument in itself. Compare the Harvard or Yale senior with the graduating class of West Point—which is the best prepared to grapple with the real physical problems of life?

I believe that it is the almost universal testimony of men in every position in life that some of the most severe obstacles occur as the result of lack of discipline. If there is one curse greater than another in the woof and fabric of our early business or professional life, it is the failure to comprehend discipline. Accidents on the railroads, in the factory, in the operating room, failures in positions of trust of all kinds are in great part due to a lack of schooling in simple obedience and in the spirit of discipline. A thorough basing in this rudimentary virtue, never subordinates the mind nor debases the body, but proper subordination and obedience inculcate pride and honor as well as high loyalty. Promptness and dispatch are other military qualities of inestimable value to any young man. This mental training, for we cannot argue that it is ade-

quately supplied in the classrooms of our colleges or universities, is in itself worth six months of any young man's time.

There can be no question whatsoever but that six months' instruction in hygiene, in discipline, in organization and in right and straight living as well as right and straight shooting, form a most worthy investment. As the result of such a period of service the nation would secure a loyal and interested citizenry, for we most love and honor that for which we have personally given something. Political and national ideals would be unquestionably elevated and physical or mental inability to give this service to the state would become here, as it is elsewhere, a reproach and shame and an incentive to clean living.

Thus the graduates of such a short period of service, which should not of course supplant our regular army, though it should certainly be entirely under the instruction of the regular institutions, would furnish a large and constantly growing list of men who would, as at present, enter the militia to carry on in their leisure hours, the lessons well begun and to become finally themselves instructors—and in case of necessity efficient and capable officers.

Such a service could bring only personal benefit; it would raise our standard of manhood, increase loyalty in every department of life and in time of war furnish the nation material quickly transformed into hardy intelligent and effective citizen soldiers.

From the view-point of the physician, such a service would become of incalculable value to each individual and from this selfish standpoint alone it is entitled to the most hearty endorsement of the entire medical profession.



Edited by Dr. J. W. Wainwright.

The Use of Petroleum as an Habitual Laxative.—Jamieson in the (*British Medical Journal*, March 6, 1915), caution against the habitual use of liquid paraffin as a purgative, suggesting that it might cause cancer. Ross in the same journal for March 20, 1915, in reference to Jamieson's warning expresses the belief that the latter was not aware of the investigations made in reference to this question and reported in the *British Medical Journal* of July 5, 1913.

Ross points out that according to these investigations liquid paraffin is one of the later products of the distillation of crude petroleum, whereas it is the intermediate fractions of the distillation that have been shown to be responsible for paraffin cancer. He asserts that the same rule holds in the case of coal derivatives such as tar, pitch and soot, which it is claimed give rise to cancer, it being here only the lighter and middle oil distillates of the carbonization of coal that have a harmful and deleterious effect on the skin.

It is believed that tar, pitch and soot contain substances called auxetics which stimulate cell proliferation and direct experiment and tests seem to prove that it is these auxetics that are culpable in tar and paraffin cancer. Auxetics have been definitely shown to be cell proliferants, which property predisposes to cancer in animals as well as in man. They are set free in the tissues by cell death following chronic injury as well as contained in or produced by other factors in their properties as cancer excitants: tobacco, arsenic and manure. Auxetics are known to produce cell division in certain classes of unicellular organisms as well as in individual tissue cells; in fact it has been proven that some cells divide only through the agency of an auxetic.

Liquid paraffin that is pure is free from the auxetics; it is distilled at 360° C., while the auxetics volatilize at a heat between 300° and 320° C. It is evident therefore that a pure liquid paraffin cannot possibly have any influence as a causative agent in cancer. Pure refined petroleum, according to Eric Pritchard, has no irritant action upon the intestines when taken internally, and is therefore, a perfectly safe agent.

Kerosene as well as other commercial petroleum products contains auxetics according to Ross, but he thinks these do not remain in contact with a cancerous soil such as the intestinal epithelium sufficiently long to be dangerous.

Some of the higher distillates of petroleum, such as kerosene, are common ingredients of certain hair growers, and these if used to any great extent, or for a long time, are known to produce on the scalp small warts and at times small eruptions indicating an undesirable irritation.

Trisodium Citrate Treatment of Pellagra.—Fossier, (*New Orleans Medical and Surgical Journal*, May, 1915) reports the treatment of one case of pellagra who was given 0.02 gram sodium cacodylate for twenty consecutive days, also daily injections of one cc. 10 per cent. solution of trisodium citrate by hypodermic injections. Fever ranged from normal to 102° F. during the first twenty days, after which it gradually returned to normal. Bowels became regular while the condition of the skin improved, and the mental condition returned to normal. Patient was greatly improved physically and mentally by the end of a month and able to walk about. When discharged at the end of the second

month of treatment, all visible evidences of pellagra, including skin lesions, mental conditions and gastro-intestinal disorders had disappeared.

Dr. Fossier attributes this cure to the trisodium citrate, but we are wondering what part was to be accredited to the sodium cacodylate.

Colloidal Gold in the Treatment of Infected Wounds.

—M. Cuneo and M. Poland, (*London Lancet*, May 15, 1915), report on the use of colloidal gold in a whole series of infected traumatism in which infection persisted in spite of the usual surgical measures. The gold was injected intravenously, intramuscularly or hypodermically in the peripheral zone of the infected region. The clearest and most valuable results were obtained in large wounds of limbs with infection by anaerobic microorganisms. In such cases there was a marked fall of temperature with diminution in the number and quality of pulsations and a return to normal of arterial pressure; local modifications in the appearance of the wound; diminution of fetid odor and secretion with decrease of edema. The later phenomena are more favorably influenced by local injections of colloidal gold. In penetrating wounds of the abdomen the remedy was used as a preventive measure. The intravascular injections are followed by violent reaction; a severe rigor which may last for forty minutes. Occasionally there is cyanosis with a rise of temperature and quickened pulse. A profuse perspiration may appear later lasting for, sometimes, several hours. Used intramuscularly, it does not cause reaction. It may thus be given in doses up to 50 cc. and repeated daily for several days. Injections may be made around the limits of the infected area, using a long needle, being careful to avoid the blood-vessels. Intravenous injections are indicated only when a rapid effect is sought. In those with lowered tension, the intramuscular method should be used.

Strychnine and Caffeine as Cardiovascular Stimulants in Acute Infectious Diseases.

—Newburgh (*Archives of Internal*

Medicine, March 15, 1915), declares that there is no evidence that the vasomotor apparatus is injured in the acute infectious diseases; that the evidence at hand does not permit us to say whether the functional activity of the myocardium is seriously impaired in the acute infectious diseases; that strychnine sulphate, in medicinal doses, does not increase the output from the heart, slow the pulse, or materially raise the blood pressure. There is no logical basis for its use as a cardiovascular stimulant.

Caffeine-sodio-salicylate, in the doses employed, did not raise the blood pressure or slow the pulse. The writer is not prepared to state whether caffeine increased blood flow in the cases he studied.

Aluminum Acetate in Smallpox.

—Traeger (*Therapie der Gegenwart*, May, 1915), reports having found aluminum acetate extremely useful in all kinds of abscesses and glandular swellings when applied in a solution in alcohol. In a recent case of smallpox he used it with improvement at once. Fever subsided, pustules retrogressed, leaving but a faint scar. This treatment was equally successful in ten cases in all. Most of the patients were children and these applications calmed the pain and itching so much so that the children clamored for applications.

He used 50 parts of aluminum acetate to 1,000 parts of alcohol; cotton dipped in this solution was laid over the face and covered with oiled silk. The chest and back as well as abdomen were also dressed in the same manner alternately during three hours. The pitting was materially checked.

Cow's Milk Modified.—Clark in the *Journal of Medical Research* (January, 1915), summarizes his conclusions thus: The addition of alkalies to modified milk to neutralize the so-called high acidity of cow's milk is based upon wrong premises, because alkalies added to modified milk to prevent a firm clotting of casein in the infant's stomach, is not only not necessary, but a procedure which involves inhibition of both gastric proteolysis and lipolysis.

Also the addition of alkalis to modified milk probably unfavorably influences a normal bacterial fermentation in the intestine and replacing it with objectionable proteolytic or putrefactive processes, responsible for many of the digestive disorders of infancy.

Bone Transplants in Pott's Disease.—

Albert E. Halstead, (*Surgery, Gynecology and Obstetrics*, June, 1915), gives the technic for securing bony ankylosis of the spine in Pott's Disease by means of bone transplants. The five steps in his procedure are fully described and illustrated. This measure will doubtless attract the attention of the surgeons. A decade or more ago such a procedure would have been considered extremely radical. Now, however, it will doubtless suffice to measurably relieve if not effect a cure in this distressing affliction.

Charcoal in Cholera.—Groak, (*Wiener Klinische Wochenschrift*, April 15, 1915), gave his cholera patients five grams of animal charcoal four times daily in suspension with a small quantity of brandy. The charcoal was supplemented with subcutaneous infusions of 1 to 2.5 liters of a 1.5 per 1,000 salt solution daily. Mortality fell to 12 per cent. under this treatment.

Iodine in Erysipelas.—Magi, (*Poliklinico*, April, 1915), declares that in his experience painting the inflamed area freely with tincture of iodine gave brilliant results, when there was infection, especially complicated with enlargement of lymph glands, following infected wounds of the hands. The swelling usually subsided after one application of the tincture while rebellious erysipelas yielded after several applications. In the severe cases this treatment was supplemented with antistreptococcic serum. Erysipelas of the face and scalp also yielded promptly.

Perfumes to Repel Vermin.—Delta, (*Presse Medicale*, May 20, 1915), found

after laboratory experiments, that strong odors caused lice to try to escape from their neighborhood. He then used a strong and inexpensive cologne, the odor of which repelled vermin, while the alcohol contents destroyed the deposited eggs. The cologne was applied without a preliminary bath in two distinct epidemics of typhus, one inside, the other outside the city limits, in Alexandria, with ninety-six and fifty-two cases. At these points the epidemic ceased after the preventive use of the perfume.

Arsenic and Potassium Iodide in Chronic Bronchitis.—

Wilcke, (*Medizin, Klinik*, May 23, 1915), found a combination of arsenic and potassium iodide effectual in the treatment of chronic bronchitis. He gives two drops of Fowler's Solution three times a day for three alternate days, with 15 minims of a 5 per cent. solution of potassium iodide on the intervening days, each being given in milk. He cautions against larger doses which he found deranged the stomach.

Action of Sugar on the Circulation.—

Crispotti, (*Poliklinico*, May 9, 1915), declares that sugar in small doses dilates the blood-vessels, while large ones constrict them. This explains the hemostatic action of injections of sugar, as well as its inhibiting action on diuresis in large doses. Thus we conclude that small doses of sugar promote diuresis, large doses reduce polyuria in nervousness or diabetes if blood pressure is not over high. The diet should be mainly liquid when large doses of sugar are being given.

Sugar as an Oxytocic.—Roig, it is stated in the *Canadian Practitioner and Review* for July, 1914, recommends sugar as an oxytocic, especially toward the end of labor where delay is due to uterine inertia alone. He confirms the original observations of Keim. In the system of pregnant women at term there is an unusually large quantity of sugar, and at the start of labor, the uterine muscle is amply supplied with

it as a source of muscular energy. In protracted labor, however, or under various other conditions, the supply may prove insufficient, and abnormal weakness of the uterine muscle result. Cane sugar acts as well or even better than milk sugar, and is more quickly absorbed. It should be given in small, frequently repeated amounts, and in concentrated solution, between meals; six drams (24.5 grams) of sugar, dissolved in a half glassful of water, may be repeated several times at half hour intervals.

Quinine in Pemphigus.—Von Leszczyński, (*Zentralblatt für innere Medizin*, December 12, 1914), reports having administered fifteen grains of quinine in 250 cc. of physiological salt solution intravenously in cases of pemphigus with favorable results.

Ligation of the Umbilical Cord.—Rachmanow, (*Zentralblatt für Gynacologie*), concludes after five years' experience comprising 16,000 deliveries, that nonligation of the cord is the method of choice in normal labor and in case of full term infants. He declares it a safe and favorable procedure, leading to good cicatrization of the navel. The author states that ligation should be reserved as a therapeutic measure for pathological cases, cases of premature birth or asphyxia of the infant as well as hemorrhages from the mother.

Pituitary Extract and Heart Failure.—E. Zueblin reports a series of cases representing a clinical study of this subject. He finds that a too extensive dose of pituitary extract in advanced age may result in a sudden harmful rise of pressure. The sudden change may be undesirable for the vessels of the brain and may be complicated with hemorrhage and apoplexy. In a weakened and tired out myocardium the distended organ may be rapidly reduced to a more normal size. In cases with but little reserve strength left, there remains a possibility that pituitary extract may help the immediate needs and that after the diminution of dilatation has become noticeable, the

patient before intolerant to the ordinary cardiac stimulation, may again be able to stand a careful test with these routine remedies. In doubtful cases, in which there may be sclerotic changes, especially sclerosis of the coronary vessels and stenocardia, pituitary extract may hasten a fatal result.

Optochin in Croupous Pneumonia.—Optochin, writes M. Kaufmann, (*Munchener Med. Wochenschrift*, March 2, 1915), is an ethyl hydrocuprein, a quinine derivative, supposed to exert a special influence on the pneumococcic infection. In one hospital, the mortality is reported to have been 11.8 per cent. under optochin treatment compared with thirty per cent. with other methods. Results when given intravenously are not so satisfactory as the agent rapidly disappears from the blood. The dose of optochin hydrochloride is 0.5 gram, divided into four equal doses distributed throughout the twenty-four hours. Individual doses should not exceed 0.3 gram. It should be continued for one or two days after fever disappears. Cases treated showed excellent results, especially if begun early in the course of the disease. Effect on the vision is to be closely watched.

Open Method of Treating Burns.—Charles Herrman in the *American Journal of Surgery* summarizes his method of treatment of burns as follows: For preventing the multiplication of the organisms of putrefaction, he powders the surface with boric acid, which procedure he has found quite effective. In brief he proceeds during the first twenty-four hours, if there is severe pain, by giving morphine; after twenty-four hours the exudated serum will cover the nerve endings when there will be but little pain providing traumatism is prevented. Stimulants, especially suprarenal extract, are given to control shock. The affected parts are exposed to the air, well powdered with boric acid. Elimination through the skin, kidneys, and bowels is increased by the use of hot air, diaphoretics, high colonic irrigation with hot water, diuretics and saline laxatives.

RATIONAL ORGANO THERAPY

Conducted under the editorial direction of Dr. Henry R. Harrower.

The Internal Secretory Organs: A Definition and a List.—In his paper "The Blood and the Specific Secretory Products of Internal Secretion," Abel (*Science*, 1915, xlii, pp. 165-8) asks and answers the following question: "What is meant today by this term, products of internal secretion, and what organs furnish principles that can be classed as internal secretions?"

"For the present we shall follow custom and apply the term to *definite and specifically acting indispensable chemical products of certain organs, which are poured into the blood and modify the development and growth of other organs, more especially during embryonic and early life, and which also greatly affect the entire metabolism, that of the nervous system included, during adult life.* The generally accepted list of organs of internal secretion is as follows: the thyroid, parathyroid, thymus, hypophysis cerebri, epiphysis cerebri, pancreas, mucosa of the duodenum, the two adrenal systems (the chromophil tissue and the interrenal bodies) and the gonads, or sex glands."

Several other organs are supposed to produce internal secretions but are not always included in lists like the above. In fact Abel himself says: "We have already seen that liver, according to Claude Bernard's view, has an internal secretion, yet this gland is not usually classed with the endocrinous organs."

Some Points on the Administration of Thyroid Extract.—Until quite recently the generally recommended dosage of thyroid extract was altogether too large, at least, in the majority of cases in which it is to be given. This was doubtless due to the fact that the original dosage as indicated in

the various pharmacopeias was based upon experience with this extract in the treatment of athyroidic individuals. It is true that a commonly suggested dose—five grains three or four times a day—is none too much in the major thyroid deficiencies, cretinism and myxedema. Occasionally it may be even larger; but since thyroid is used very frequently in a host of other conditions of functional minor hypothyroidism, it is well to remember that the dose in such cases is very much smaller: 1-10 to $\frac{1}{4}$ grain given three times a day usually suffices.

Small doses of iodine, 1-50 to 1-100 grain given conjointly with thyroid extract frequently make the therapeutic reaction more decided and Osborne, of Yale, has called attention to the fact that seemingly inert thyroid preparations regain their activity when iodine is added. Potassium iodide in small doses also has been suggested as a useful adjuvant to thyroid therapy.

The variation in thyroid products of different manufacturers is quite an important factor. Many articles have been written regarding the importance of the iodine content, and the differences between extracts made from glands taken from sheep of different ages and at different times of the year. In the writer's opinion, the location in which the flocks of sheep have grazed has a great deal to do with the activity of the extracts made from their thyroids, and by far the best preparations are obtained from the organs taken from young sheep which have been pastured near the sea—iodine, it will be remembered is distinctly a seaside product.

Occasionally patients need thyroid extract, but do not seem to tolerate it well. In such cases the whole day's dose, $\frac{1}{2}$ to 1 grain, may be given just before retiring thus obviating some of the inconveniences

with the heart and respiration. In these cases Heinrich Stern suggests that arsenic—sodium cacodylate—in small doses may be given conjointly with thyroid to prevent the untoward symptoms.

The indications of thyroid overdosage are obviously an admonition to stop the dosage temporarily. The principal manifestations are increased heart action and perhaps a slight rise of temperature, as well as headache, nausea, irritability, restlessness and occasional pains in the limbs and back.

French authorities recommend the use of one centigram of thyroid extract ($1\frac{1}{2}$ grains) to be given daily in a single dose, but more frequently in divided doses, for one week. The medication is then omitted for a week or even longer, and begun again. Occasionally individuals supersensitive to thyroid medication may establish a tolerance to a given dose and after reducing the amount and starting it again, it may be found that they are able to take very much larger doses without any of the previous symptoms of intolerance.

In women, especially those suffering from obesity, who are taking thyroid to facilitate reduction it may be that the addition of corpus luteum to thyroid, say $\frac{1}{2}$ grain of thyroid and 5 grains of corpus luteum three or four times a day will bring about much better results than the thyroid alone. This is particularly true in patients near the menopause.

The use of thyroid extract for children—it is one of the most commonly used organotherapeutic agents in pediatric practice—must be regulated very carefully and unlike alkaloids and mineral drugs, the dosage does not depend upon the body weight or age, of the child, but rather upon its individual susceptibility. The only way to establish proper doses is to give very small doses—1-20 grain—to start with, gradually increasing the amount until a maximum is reached, watching very carefully for the first evidences of intolerance already mentioned.

Under no consideration should thyroid be permitted to be used indiscriminately and without the most careful medical supervision.

(July, 1915, p. 575) reference was made, under the above title, to an interesting theory set forward by Dr. S. W. Little, of Rochester, wherein he suggests that cancer may be modified by the administration of organotherapeutic extracts prepared from the internal secretory organs which originate from the same blastodermic layer as the organ affected by the cancer.

For cancer of an organ of ectodermic origin such as an epithelioma he used total pituitary substance; for cancer originating in the mesoderm such as the uterus he used adrenal cortex; and from the endoderm such as the stomach he uses a preparation containing the internal secretion of the pancreas.

As a result of this Dr. C. R. Love, of Brooklyn, directs attention to an interesting report made by him some years ago (*N. Y. Med. Jour.*, Jan. 29, 1910) of a case of total absence of the adrenals. The case report is prefaced by the following statement: "In studying the history of the following case, the theory suggested itself that diseases are related according to the blastodermic membrane from which they are derived. It is well known that the adrenals have a great influence on the skin, also that the epidermis and the medullary portion of the adrenals are derived from the epiblast, while the mesoblast forms the cutis and the cortex of the adrenals. When, therefore, the medullary part of the adrenals are affected by disease the epidermis suffers, and when the cortex is involved the cutis is the chief sufferer, while, when the whole gland is diseased, the entire skin is severely affected."

This undoubtedly shows that the relation of the various organs of the different blastodermic layers has been considered previously, but it still seems that the suggestion of Little is quite original at least in so far as cancer is concerned, since he has applied it in a practical, and from all the reports, a very promising way. It is fair to add that Love and his associates made a clinical application of this theory in the case mentioned above, and in a recent communication (Aug. 27, 1915) he remarks that "it was, in fact, the treatment of the case, that after the autopsy suggested this theory. For instance adrenalin did not give the benefit that was derived from the desiccated gland."

"A New Idea in Organotherapy."—In a previous issue of AMERICAN MEDICINE

Adrenalin in Cholera, etc.—In order to cure a malady one ought to know as much as possible about its mechanism, and the discoveries of Cannon of Harvard relating to the influence of the emotions upon adrenal activity has explained at least a part of the mechanism of several serious infectious diseases. Briefly, Cannon discovered that fear, rage, pain, etc., caused a remarkable increase of the activity of the adrenal glands, in order that there might be an excess of adrenin in the blood to fortify the animal. In Asiatic cholera we know that there is extreme pain, and other evidences of adrenal insufficiency—collapse, pallor, reduced tension, as well as a considerable reduction in the reaction of the system to medication. The patient very quickly gets beyond ordinary treatment and is soon moribund.

Naamé, of Tunis, conceived the idea that adrenalin might be given with reasonable hopes of success to counteract collapse in cholera and, as a result of his original paper, delivered before the Société Médicale des Hopitaux de Paris, February 9, 1912, a promising method for the treatment of cholera with adrenal extract has been evolved.

He believes that this disease is essentially a toxic hypo-adrenia, that it is divided into the commencing phase—bacillary, intestinal and comparatively harmless; and a second phase—toxic, adrenal and frequently fatal.

Clinical experience shows that patients suffering from cholera have a remarkable tolerance for adrenal extract and doses four or five times the so-called "maximum" are not only well borne, but exert very decided beneficial effects. This method of treating cholera is evidently a typical instance of substitutive organotherapy, for in administering the principle of the adrenal medulla, one is restoring to the organism a principle, of which it had become deprived by the action of the cholera toxins upon the adrenal glands.

According to Naamé, $\frac{1}{32}$ of a grain of adrenalin chloride may be given two or three times in 24 hours (this corresponds approximately to 30 minims of the standard 1-1000 solution, for one ounce of this solution contains just over $\frac{1}{2}$ grain of the active substance) and this should be continued for several days. Usually it is given subcutaneously, but where there has been an

extreme loss of fluid, it should be combined with liberal intravenous saline infusions. Analgesic drugs such as morphine and cocaine should be avoided, because, since one of the principal functions of the adrenalin is to exert a degree of control on the poisons of the body, the reduced adrenal function makes the system much more susceptible to intoxication by all poisons, including the drugs just mentioned.

This idea is being taken up quite generally and the most recent reference to the adrenal treatment of severe intestinal infections is found in von Gröer's paper (*Münch. med. Wochenschr.*, Apr. 6, 1915). He found that adrenalin given by the mouth¹ has a remarkable action in quieting the abdominal pain and tenesmus which torment the patient in the severer cases of dysentery. By giving it every one or two hours it is possible to keep the patients entirely free from pain. In an experience with 300 cases he found that even enormous amounts were borne without appreciable by-effects. The same action was apparent after intramuscular injections of adrenalin, but with this the usual effects on the heart were apparent, which was not the case when given by the mouth; only the relief from abdominal pain, nausea, and singultus was realized then. Pain in the stomach or bowel of non-dysenteric origin was not affected in a number of cases. The addition of adrenalin to tepid saline solution for flushing the bowel also had such a remarkably favorable action that it suggests the possibility that the adrenal principle may have a direct neutralizing action on the dysentery toxin.

A Serious Complication of Infectious Diseases.—French investigators seem to know more about the ductless glands than we do and, as a result of this, *opothérapie*—the French term for organotherapy—is used by practically all physicians in France. Among numerous other things we are indebted to several French writers for directing our attention to a very common and sometimes extremely serious

¹Special attention is called to the fact that this report substantiates in a very decided manner the position held by the writer. (See "Giving Organotherapeutic Products by Mouth," *American Medicine*, Apr., 1915, p. 253).

complication of the various infectious diseases.

Many of the severe infections, including diphtheria, erysipelas, scarlet fever, typhoid, measles, etc., frequently take a serious turn and the patients manifest marked prostration, abdominal pain, vomiting or circulatory disturbances. Too often these malignant complications prove speedily fatal. Occasionally the serious manifestations are masked and their origin is often overlooked. It is interesting to know that a large series of autopsies made by different investigators indicates that practically the only constant change to be found in patients dying from the malignant forms of infectious diseases consists in changes in the adrenal glands.

Closer consideration of the clinical findings will show that the severe asthenia and hypotension which is almost invariably present, is adrenal in origin and this directs the attention to a most satisfactory means of combating this syndrome when it manifests itself or, better still, preventing its appearance.

Hutinel (*Arch. de Méd. des Enfants*, Feb. and Mar., 1915) reports that in the treatment of these severe infective conditions in children he never obtained so much benefit from the various local treatments, serotherapy and the orthodox procedures, until he used adrenalin as an adjunct treatment. He uses the 1-1000 solution and gives three or four drops by mouth, diluted, every two or three hours and permits the daily dose in small children to aggregate as much as 20 minims. The effects are remarkable even in the gravest cases. The blood pressure rises, there is an immediate response in the mental and physical condition, and the pulse is favorably controlled and the urine increases in amount. Of course this procedure is used in conjunction with the usual measures, which vary with the conditions present and the different diseases. This serves to emphasize the remarks made in a recent paragraph regarding the importance of adrenal therapy in cholera.

which are pertinent enough to keep them from being buried forever in a dusty file.

He writes apropos of the value of secretion in neurological practice: "The very thing I am now looking for is a reliable form of internal secretion that will stimulate the alimentary tract, and enable me to deal successfully with the constipation and general want of tone which is so troublesome a complication of functional nervous disorders. If I could find something of this kind that will assist the alimentary canal in the performance of its functions, it will be a great blessing both to me and my patients. A little while ago, I had a case of neurasthenia with obstinate constipation treated by an injection of hormonal—one injection only—the result was astonishing. . . . In many of the cases of nervous prostration, depression and constipation that are sent to me, I feel that there is a great deficiency in the various internal secretions. Sometimes thyroid is what is needed, but usually in giving it one feels that one is making a shot in the dark."

It is interesting to see how the neurologists are turning to the internal secretions and the ductless glands as a means of solving some of the problems which confront them. There is no doubt that the attempt to reestablish normal digestive action favors in a very marked degree the other treatment of functional nervous disorders. The experience with hormonal mentioned above shows this, although it is not recommended that hormonal be given as a routine in these conditions, for the injection is made intravenously, and only in the severest forms of constipation with intestinal paresis. Many physicians are following the present fashion and have recourse to Russian or American mineral oil, and in another part of the letter from which the above quotation is made, appears a statement: "I regard mineral oil as a useful remedy but look upon it as a makeshift."

Clinical experience with secretin-bearing preparations will, in the writer's estimation, solve a number of these difficulties, for in spite of the position taken by some that this hormone is not available when given by mouth—an altogether unwarranted position as was clearly shown in this department ("Is Secretin Destroyed in the Stomach?" and "Proof that Secretin Therapy is Possible," AMERICAN MEDICINE, May, 1915, pp.

An Adjuvant in Nervous Disorders.—

In a personal letter to the editor of this department, a prominent Harley Street (London) physician makes some remarks

323-325)—it brings about quite noticeable changes in the digestion and this, to say the least, is an advantage in the treatment of these conditions.

Some interesting historical points about internal secretions are to be found in a paper by Prof. J. J. Abel of Baltimore, in a recent issue of *Science* (August 6, 1915, p. 165). Among the early scientists in France there were several whose convictions laid a good foundation upon which later was built the wonderfully complex superstructure of today. Perhaps this explains, in part, the hold that organotherapy has upon French physicians.

In 1775 Théophile de Bordeu of Montpellier and later Paris, a fashionable practitioner with a considerable knowledge of anatomy, propounded the doctrine that every organ lives its own life and is the source of specific chemical substances, termed by him *humeurs particulières*, which are yielded up to the blood and are necessary to the integrity of the body. Several twentieth century writers have suggested that the so-called "ductless glands" are by no means the sole source of the internal secretions or hormones, and the remark has been frequently made that since so many organs have a dual function (it will be remembered that the pancreas, liver, spleen and duodenum, produce an internal secretion in addition to their other better-known physiologic activities), study of this faculty of producing something to add to the blood and thus influence the activity of other organs, near or remote, may open up untold possibilities for treatment.¹

The idea that every organ has its own special life is repeated again and again in Bordeu's writings (published in 1818): "It must be remembered that each organic part of the living organism has its own manner of existence, of acting, of feeling and of moving; each has its own particular savor, structure, external and internal makeup, odor, weight, manner of

growth, of expanding and contracting; each competes after its own manner and for its share in the ensemble of all the functions in the general life; each organ, in brief, has its own life and its own functions quite distinct from all others." From the organs the blood derives a multitude of humours and emanations (*nuées d'émanations qui composent et animent le sang*). This is further explained by another quotation from Bordeu which Abel has included in his address: "Comparable at bottom to fecundated white of egg, the blood (a fluid tissue which fills the vessels of the body) is animated by the semen, that is to say it contains a certain quantity of seminal emanations which vivify it; it contains in the same way a portion of the bile, and also of the milky juices, especially in infancy and in women at the time of pregnancy; it contains a colored part which is elaborated in the entrails; it has serosity in abundance; it contains an extract of each glandular organ which contributes its share to the emanations in which all the solid parts swim (in the blood); a certain quantity of air; a portion of mucous substance. . ."

Naturally this caused Bordeu to presume that diseases are consequent to a superabundance, loss or wrong admixture of these various special principles or "emanations"—a position very similar to that which has been scientifically demonstrated in the past 25 years. "There is nothing new under the sun."

Nutritional disturbances of children are almost invariably endocrinous in origin and by far the most commonly disordered gland is the thyroid. In fact, it is almost impossible to find a decided nutritional dyscrasia in children without tracing it very quickly to the thyroid gland. Such manifestations as mental dullness, enlarged tonsils or adenoids, nasal or bronchial catarrh, dry, rough skin with coarse hair, as well as defective speech and occasionally soft bones, are all indications of deficient action of the thyroid gland. The metabolic changes in rickets are undoubtedly due to disturbances in the thyroid apparatus (thymus, thyroid and parathyroid glands) and it seems quite certain that the original idea that rickets was a disease due to faulty feeding, and

¹See especially "The Role of the Blood Plasma in Disease," by Dr. Harry Campbell of London. (*Lancet*, Feb. and Mar., 1907). A very brief consideration of Campbell's ideas concerning "The Cell's Altruistic Activities," will be found in this department of *American Medicine*, June, 1915, p. 508.

particularly poor quality of mother's milk, or to impossibility of breast feeding, must now be relegated to the background and the thyroid apparatus be given first consideration. It is quite remarkable how very small doses of thyroid extract—1-20 to $\frac{1}{4}$ of a grain t. i. d. for some weeks—will modify the manifestations mentioned above and it is safe to say that physicians who remember the extreme intimacy of the thyroid gland with disturbances in nutrition in children will be much more successful in their treatment of them.

Organotherapy in Pediatrics.—No branch of therapeutics seems to offer more encouraging prospects in pediatric practice than organotherapy, especially when one considers the numerous developmental disturbances which are so common in early life. The principal reason for this is due to our increasing knowledge of the important part that is played by the various ductless glands in both physical and mental development. It is surprising how many of the diseases of childhood result from a reduced or perverted action of the chemical processes of the endocrinous organs. Since these chemical messengers not only act as stimuli to certain phases of development but also as antagonists to abnormally fast development in certain directions, the importance of a knowledge of the ductless glands and the organotherapy that their products make possible, will be quickly seen.

In an interesting article by Isabelle Thompson Smart (*Medical Review of Reviews*, 1915, xxi, 269) organotherapy is considered as a valuable aid in pediatric practice. She aptly remarks "that probably the most commonly used extracts in the developmental disorders of children are, in their approximate degree of utility: thyroid, thymus, total pituitary, pineal, lymphatic gland. Thyroid extract is used more frequently than all the rest put together and doubtless rightly, for thyroid is unquestionably the keystone of the internal secretory arch. When thyroid is given in small doses to children, and by small doses we mean 1-20 to 1-4 grain t. i. d., it not only exerts the limited action of the actual substances given and by its homostimulant action increases the activity of the thyroid in the body, but

by its subtle influence upon the hormone balance regulates in a mysterious way the whole of the internal secretory activities. We cannot always explain why the thyroid extract is such a remarkable remedy, but we are satisfied to know the extraordinary results that frequently follow its use in cases where there is a metabolic disturbance of obscure origin and in which there are none of the indications of cretinism. An unscientific but very satisfactory means of treating this large class of cases is to give thyroid extract as one physician says like a 'hit in the dark' and while misses are not uncommon, the physician who does this will be surprised at their comparative infrequency."

One important fact which favors the application of organotherapy in pediatric practice is the harmlessness of the remedies. With ordinary caution one can never do harm, while on the other hand the good that may be accomplished is inestimable.

Pancreatin in Infantilism.—In spite of the dictum that pancreatin is destroyed in the stomach and consequently is useless when given, as is done so often, in tablet form—a position with which we cannot agree—it was interesting to read in the *Journal A. M. A.*, (June 12, 1915, page 2022) an abstract of an article by Byron Bramwell on "Pancreatic Infantilism." This disease was associated with chronic diarrhea and the diagnosis indicated that the condition was due to defective or arrested pancreatic secretion but in all cases the diarrhea was cured, and the infantilism removed by the administration of pancreatic extract, and by that means alone. There is no evidence that this extract was given hypodermatically, or that it was protected in any way, and it seems that this is simply additional evidence of the fact that pancreatin is not destroyed in the stomach.

At all events, the principal characteristics of this condition referred to by this author are arrested bodily and sexual development, intelligence and mentality good, bone structure normal, and practically no other manifestations save a chronic diarrhea, flatulence and evidence of defective or arrested pancreatic secretion. This is believed to be due to chronic pancreatitis. The average

dose of pancreatin is from 3 to 10 grains three times a day, an hour before meals and at bed time.

Thymus Medication in Rheumatoid Arthritis.—As a result of the painstaking work of Nathan of New York, it appears that the extract of the thymus gland of calves may be administered with prospect of moderately good results in certain cases of chronic rheumatic arthritis. In the majority of the cases thus treated this measure is used as a last resort and the percentage of "cures" is naturally very small. In such cases, however, the reduction of the pain and increase in mobility are much to be desired and it appears that persistent thymus medication first reduces the pain in the affected joints and later causes a gradual restoration of mobility to a point more nearly normal. Nathan goes so far as to recommend that all other therapeutic procedures be discarded before commencing the thymus treatment and even suggests that there is no necessity for dietetic restriction. Rest and a nutritious diet and thymus extract in 10 to 30 grain doses, three or four times a day frequently relieve the most active symptoms. In severe cases this treatment should be continued for months and many hopeless bedridden patients have been markedly benefited by it.

In Nathan's own words: "It is certain that when thymus is taken conscientiously for a long time and the patient otherwise judiciously handled, marked improvement, if not perfect cure, can always be expected." Several others, in comparatively recent literature, show that Nathan's experiences are being duplicated; and in a recent conversation with a prominent Philadelphia orthopedist we were informed that he had treated twenty cases of arthritis deformans with persistent thymus medication and that the aggregate of the results was extremely good—far better than he had expected.

Thymus extract is made from the thymus gland of fetal calves and is one of the most difficult of the organotherapeutic extracts to prepare. Nearly always it has a rather unpleasant odor, but it is not toxic, for as much as 60 to 90 grains may be taken daily without inconvenience. It should be re-

membered, however, that the thymus is very rich in nucleins and some have hinted that it might be a detriment to patients with a uric acid diathesis. Seemingly this is not so and, in any event, proper eliminative measures are always in order as a routine in the treatment of all forms of rheumatism.

"Bodily Changes in Pain, Hunger, Fear and Rage."

—As a result of his interesting research work some years ago on the mechanical factors of digestion, W. B. Cannon of Harvard, was led to study the physiological manifestations accompanying pain, hunger and the strong emotional states. In a recent book which bears the above title (D. Appleton & Co., New York and London, 1915, p. 311, \$2.00), this writer has given us a very good explanation of some of the phenomena which accompany pain and the emotions. We now know that manifestations of this character are frequently accompanied by stoppage of the digestion, glycosuria, temporary abolition of fatigue, faster clotting of the blood and other important changes of the chemistry of the body which make possible feats of strength and endurance *in extremis*. Aside from the prophylactic possibilities that this information may suggest to the practicing physician, there is a good deal of information regarding the relation of the adrenal glands and the active principle of their medulla to these emotional states, and some of the facts brought out by Cannon and his collaborators lend emphasis to the increasing number of reports regarding the importance of adrenal medication in certain severe infections and conditions associated with great pain, etc.

A study of this book will convince the reader that the rôle of the adrenal glands is far more important than has generally been believed and if only one point of therapeutic interest is gained—the value of giving various hormonal preparations to supply the hormone which is liberated in undue quantities by these subtle emotional changes—it will be a great advantage.

Like most literature dealing with the ductless glands and the internal secretions, Cannon's book is of fascinating interest, for frequently one finds data which explains

phenomena long noticed but not understood. One cannot but cordially commend it to those who are beginning to appreciate the important part that the hormones play in practically every phase of the activities of the body.

PRACTICAL POINTS.

Hemoptysis.—Various hemorrhages, including hemoptysis, nosebleed and even hemophilia have been successfully treated with hepatic extract.

Nymphomania is frequently a form of hyperovarism and in such cases mammary extract, 10 grains at meals t. i. d., may be of service.

A dry, rough skin is not only found in individuals with serious organic thyroid disease; frequently it is a useful indication of a minor hypothyroidism.

Climacteric Hypertension.—High blood pressure at the menopause has been reduced following a course of corpus luteum. This was, of course, given for its direct effect upon the other climacteric disturbances.

Snoring in Hypothyroidism.—Snoring is said to be one of the incidental indications of minor hypothyroidism. It is especially significant when it suddenly begins in persons not previously addicted to it.

Subcutaneous injections of pituitary and other similar products may cause local trouble, due to undue vasoconstriction. The solution is much better given by intramuscular injection, $\frac{1}{2}$ to 1 cc. at a dose.

Tachycardia.—Rapid heart action from thyroid excess or other causes is favored by pituitary medication. For rapid results injections of pituitary liquid; for gradual

effects total pituitary substance $\frac{1}{2}$ to 1 gr. after meals.

Cardiac Myasthenia.—Total pituitary substance in $\frac{1}{2}$ to 1 grain doses, t. i. d., is an excellent tonic to unstriated muscle and seems to be of special service in old heart cases. It may be given for several weeks or even months.

Mucous Colitis.—The best single remedy for mucous and muco-membranous colitis, according to Roger, the famous French internist, is bile. It is given in two or three grain doses after meals and continued for months. It should be supplemented for a time at the commencement of the treatment by a bile enema.

The Bile Enema.—Fresh ox or pig bile is secured (and, if necessary, temporarily preserved with salicylic acid or other convenient preservative). One tablespoonful is mixed with four ounces of lukewarm water and injected high into the colon, allowed to permeate the upper portion of the lower bowel and held there all night. A small amount of ichthyol may be added if desired. If this dose causes irritation reduce it and gradually increase the amount until as much as two ounces of bile is injected at one time. A course of eight or ten injections should be given.

Adrenalin in Diphtheria.—Several investigators, including Marie, Kassowitz and von Gröer, have called attention to the fact that adrenalin and similar preparations exert a detoxicating effect upon the diphtheria toxin. It may be given by mouth, but 10 to 30 minims intramuscularly would seem to be the best.

Pituitary in Old Age.—Injections of solutions containing the pressor principle of the pituitary (posterior lobe) must be given with caution to old persons, since it may dangerously raise the blood pressure. In apoplectics or persons, manifesting a tendency in this direction it is absolutely contraindicated.

THE ANNOTATOR

An American Conquest in Europe.—

It is announced that Dr. Richard P. Strong, head of the American Sanitary Commission in Serbia, is on his way home to this country, and that the majority of the American medical men engaged in Red Cross work in Serbia will leave that country in a short time.



This announcement marks the end of one of the hardest and most difficult struggles against disease in the world's history and records a great triumph for American methods of treatment. It is generally believed that the measures that have been taken, make it most unlikely that another epidemic of typhus will again attack Serbia, especially since the Serbian people have been so well taught concerning the most effective means for preventing the disease. The entire Serbian army and a large number of the people have been vaccinated against cholera and typhus. By August 20th last, virtually all the epidemics that had been raging in the country had been entirely suppressed and the spread of typhus into Montenegro had been prevented. While the present war has been much disgraced by its inhuman methods of fighting, it has been distinguished by the wonderful success attained in preserving the health of the armies engaged. Except in Serbia there has been no widespread epidemic of disease, and taking into consideration the fact that the fighting has been going on for longer than a year, this is indeed a remarkable result. Typhoid, that scourge of warfare has been successfully prevented, at any rate, its ravages have been confined to sporadic outbreaks, and cholera has been restrained within reasonable limits. From the health point of view, the campaigns in

Europe appear to have shown clearly that epidemic diseases have been brought well under control, and although it is unwise "to crow until one is out of the woods" the history of the war to date justifies the hope that never again will disease decimate armies as heretofore. So far as the suppression of typhus in Serbia is concerned, further details with regard to the efficacy of Plotz's vaccine will be awaited with the most intense interest. In the meantime it will not be premature to congratulate Dr. Strong and his co-workers upon the notable victory they have won for American methods and for the energetic manner in which they have carried these methods into effect, to the everlasting glory of American skill, tact and courage.

Infection Dangers from Public Library Books.—

No one can spend much time in any large, well patronized public library, and study those who use and borrow its books without wondering to what extent pathogenic bacteria may be thus conveyed. In this day of disease prevention it is natural to regard every promiscuously handled object as a possible



medium of infection, and knowledge of the carelessness not only of children but of the average adult in regard to the toilet of the mouth and nose, the dissemination of the nasal and throat secretions, and the cleanliness of the hands—to say nothing of the conditions in countless homes—makes it anything but unreasonable to look upon our public library books with suspicion.

Some recent experiments, however, undertaken by Drs. Henry Kenwood and Emily L. Dove and published in the *London*

Lancet (July 10, 1915) with the purpose of testing the possibility of transmitting tubercle bacilli in an infective form by the agency of books would seem to indicate that the danger is very slight.

Patients were allowed to cough upon sheets of paper and these were then washed and the washings injected into guinea-pigs. An interval of twenty-four hours elapsed between the contamination and wash of the papers. Tuberculosis was produced in pigs from eight of the pieces of paper, while six papers caused no infections. The test was repeated with papers kept one month after their contamination; guinea-pigs inoculated from these papers manifested nothing. Similar tests were made with thumb marked pages from books from the public library which had been recently used by tuberculous patients; no infections resulted. Sheets of paper were then thumb smeared with diluted tuberculous sputum and six of these were washed twenty-four hours later and the washings injected into as many guinea-pigs. Of these one died of sepsis, four manifested tuberculosis, and one was uninfected. Six other sheets similarly treated were kept for a month, and of these only one produced tuberculosis in guinea-pigs. Further, it was found that the exposure of such contaminated sheets to moist heat at 95° C. for half an hour served to kill all the tubercle bacilli. The same result was secured with pieces of contaminated handkerchief immersed for fifteen minutes in water which had been brought to the boil and which was then removed from the flame. From these results the authors conclude that the danger of transmitting tuberculosis through the use of books by infected persons is very slight and can be practically removed by the temporary withdrawal of such books from circulation. The extent to which other bacteria or organisms may be transmitted by books circulating among the public remains to be investigated. No matter how slight the danger, as long as any possibility whatsoever exists, it would seem incumbent on our library officials to follow some routine plan of disinfecting every borrowed book as it is returned and before it is allowed in circulation again. Probably some system is in practice in many libraries, but there are many in which no precautions whatever are taken. The matter is cer-

tainly deserving of careful attention, and in using our public libraries, every one is entitled to the assurance that due care has been taken to remove all dangers from infection that may lurk in the pages of indiscriminately handled books.



Treatment of Vulvovaginitis in Little Girls.—

The treatment of vulvovaginitis in little girls is still in a decidedly unsatisfactory condition to Wm. J. Robinson, M. D. (*Amer. Jour. Clin. Med.*, April, 1915). On account of the smallness and inaccessibility of the parts, thorough-going treatment frequently is impossible. The *noli me tangere* superstition, that the hymen is something sacred and must, under no circumstances, be ruptured, makes the treatment still more difficult. Strictly speaking, vulvovaginitis should constitute a hospital-disease, but, owing to the length of time required for a cure, this frequently is impracticable or impossible. However, a competent nurse or, barring that, a firm, intelligent mother, is a *sine qua non*.

The keynote of the treatment of the vulvovaginitis of children, as it is in gonorrhea in adult females, is gentleness. Whatever we do, we must do no harm, and certainly must do nothing that may favor an extension of the inflammatory process above the internalos.

In general, the treatment of vulvovaginitis in children consists in ensuring cleanliness and the employment of vaginal instillations and suppositories.

Locally, erosions, if any, must be touched up with silver nitrate or iodine. The vulva should be washed several times a day, depending upon the amount of the discharge, and protected with a gauze pad, over which a pair of drawers or knickerbockers which the child itself cannot undo are to be worn. The washing of the vulva may be done with just plain soap and water, or boric-acid solution, Burrow's solution or a 1:1000 chinosol solution may be employed.

Irrigation of the vagina should be done by means of a fountain-syringe having a small glass nozzle. About a pint of irrigating solution should be used at a time; the pressure should be low. The best solution for vaginal injections is a weak 1:1000 lactic-acid solution; or, a weak solution of tincture of iodine (1-2 to 1 fluid dram to a quart of water) may prove equally good. We do not expect to destroy all the germs by means of the vaginal injections; still, we do destroy some of them; besides, leaving the pus in the parts produces erosions and chafing, and gives rise to condylomata acuminata. So, even the mechanical removal of the pus does good.

Where an inspection of the vagina shows erosions (and no treatment can be satisfactory unless inspection is made with a small vaginal speculum—not a urethroscopic tube—and strong light), these must be touched up with a 10-per cent. silver-nitrate solution or with full-strength tincture of iodine.

After thorough douching, it is well to instil, in obstinate cases, 30 to 60 minims of a 5-per cent. protargol solution, or a 2-per cent. silver-nitrate solution. As conditions improve, the instillations need be repeated only once or twice a week.

"While I have no use whatever for suppositories and bougies in male gonorrhea," says the author, "they are of some value in gonorrhea in the female, and I often prescribe a small 2-per cent. protargol suppository having the following composition.

Protargolisgr. 1-2
Acidi boricigrs. 5
Olei theobromatisgrs. 25

M. ft. suppos. No. 1. Dent tal. dos. No. 30.

S. One suppository at night.

From the use of kaolin or kaolin and yeast, I have abstained in little girls; first, because they are difficult of introduction and application; second, the powder forms hard concretions, which are difficult of removal (which is not the case with adult females).

Vaccines I do not use at all, for I have not found them of the slightest value. They frighten the child and cause it unnecessary pain, without producing the slightest beneficial effect. I am glad to see that other investigators are coming to the same conclusion."

The Treatment of Morphin Addiction.—The enforced interest medical men have had to take in morphin patients has led to the painstaking study of the various systems most serviceable for mitigating the awful suffering caused by withdrawal of the drug.

The so-called Lambert-Towne treatment has been used extensively but recently our attention has been called to a treatment used in the Chicago House of Correction that is said to give more permanent results in the management of this unfortunate class of patients.

This plan of treatment is described by Dr. Charles E. Scelth (*Jour. A. M. A.*, Mar. 13, 1915), as follows:—The Chicago House of Correction and the Emergency Hospitals have, during the past fifteen years, been called on to treat over 3,000 cases of narcotic drug addiction, principally morphinism. The large number of cases has given an opportunity for developing a treatment which we have found worth while. Many physicians have requested us to publish our formula, and, with the introduction of the Harrison law, the largely increased demand for such a treatment has caused us to describe the treatment. This must be regarded as a preliminary report.

When patients are received in the hospital they are given a preparatory dose of saline

cathartic. The basis of the medical treatment is the following:

Scopolamin hydrobromid.....gr.1/100
Pilocarpin hydrobromategr. 1/12
Ethyl-morphin hydrochlorid—
(dionin)gr. ss
Fluid extract cascara sagrada....m xv
Alcoholm xxxv
Waterqs. ad 3 i

The dose is varied according to the extent of the addiction. Patients vary from 1 or 2 grains to as many as 60 to 90 grains a day of morphin. When more than 10 grains of morphin per day are being taken, 60 minims of the above mixture are given every three hours day and night for six days. On the seventh day the dosage is reduced to 30 minims, the eighth 15 minims, and on the ninth 15 minims three times a day instead of every three hours day and night. On the tenth day the mixture is discontinued and strychnin nitrate, one-thirtieth of a grain, three times a day, is used. On the eleventh day strychnin nitrate, one-sixtieth of a grain, is given, and this is continued for a week. During the first five days only light diet is given, but patients are encouraged to take liquids freely.

If a patient is using less than 10 grains of morphin a day, the dose should be 30 minims of the mixture to begin with. If he is using less than 5 grains, 15 minims are used as a starting dose. During the first three days the patients suffer from insomnia, and in about 10 per cent. of the cases vomiting; this is to be expected. If the pulse goes below 40 or over 120, the mixture is stopped for a single dose. If there is collapse, one-half grain of ethyl morphin hydrochlorid or one-fourth grain morphin is given hypodermically. In about 4 per cent. of the cases a scopolamin delirium may develop. In such instances the mixture should be given without scopolamin for two doses, and then continue with scopolamin in one two-hundredth-grain doses.

During the treatment no other drugs should be used. After the fifth day the patients will have no further desire for morphin. Up to this time they care very little for food, but after the fifth day they develop a ravenous appetite and will gain weight rapidly. Extremely emaciated patients will gain a pound a day for the first thirty days.

As stated, the results of the treatment have been, to our mind, quite efficient, and have been found on comparison to secure more lasting results than the Lambert-Towne atropin treatment. The patient should be directly under the physician's care, but after eleven days, the strychnin treatment of seven days may be safely entrusted to the patient.

The final results are, of course, dependent on the cause of the addiction. If, since the beginning of the habit, the cause has been removed, the patients are permanently cured and do not return to the habit. Where the cause persists, whether it be functional neurosis, a degenerate mentality or criminality, the patient occasionally returns to be treated anew. The treatment of the cause should be borne in mind at the time any corrective treatment is undertaken.

GLYCO-THYMOLINE

(TRADE MARK)

AS A SURGICAL DRESSING

A Typical Case Treated with Glyco-Thymoline in a French Military Hospital.

Moroccan trooper wounded by bursting shell at the battle of the Aisne, September, 1914.

Wound first cleaned with Hydrogen Peroxide and then swabbed with full strength Glyco-Thymoline. The orifice was covered with a compress of gauze saturated with a 25% solution of Glyco-Thymoline and covered with cotton and oiled silk. Dressing changed every six hours.



The wound after three weeks treatment with Glyco-Thymoline showing method of syringing out wound with Glyco-Thymoline.

Note gradual closing.



After nine weeks treatment with Glyco-Thymoline. Note that complete cicatrization has taken place.



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SPECIAL THERAPEUTIC ARTICLE.**FORMALDEHYDE AS A BACTERICIDE AND ANTISEPTIC IN THE TREATMENT OF CERTAIN INFECTIOUS CONDITIONS AND INFLAMMATORY AFFECTIONS OF THE THROAT.**

BY

WILLIAM H. NEWCOMB, M. D.,
New York City.

In this paper I propose to somewhat briefly review mainly from the clinical aspect and chiefly from my own experience, the value of some antiseptics and bactericides and the most effective means of applying them in the treatment of throat affections before, during and after operation. As a surgeon who, for many years has operated for the relief of nose and throat diseases and abnormalities, I recognize with more and more conviction the absolute necessity for securing in these and adjacent regions, as great sterility as possible, if good results are to be obtained.

Although the mouth structures are known to be resistant in a high degree to infection, yet it sometimes follows that infections of the tonsils and surrounding tissues have taken place after operation on the nose. It must be borne in mind that oral asepsis is as important before and after operation in the nose as it is in the throat. Therefore it is good practice to administer an antiseptic as a means of prevention in such cases.

While it may be impossible to sterilize the mouth and keep it sterile, and while it may be extremely difficult to sterilize the throat and nose and retain sterility therein, the risk of auto-infection during operations in the vicinity of the mouth may be vastly reduced by the intelligent employment of certain germicidal agents. The importance of oral and pharyngeal asepsis in the treatment of infective conditions of the throat and nose can scarcely be overestimated. That the parts should be carefully cleansed and rendered as aseptic as may be is so obvious as seemingly not to need emphasis, and yet it occurs more or less frequently that

efficient measures for bringing about this object are neglected or the proper means for accomplishing this end are not employed. The difficulties in the way of rendering the parts affected or those in dangerous proximity sufficiently aseptic to minimize the risks attendant on treatment or operation are partly mechanical and partly due to the fact that perhaps the majority of germicides and antiseptics which are employed for this purpose are unsuitable from one cause or another. The mechanical difficulties which obtrude themselves in this connection are very great and up to a comparatively recent date have not been overcome to any extent. It is well understood that the task of reaching all the crypts and crannies of the pharynx by the devices which have been used with the view of bringing about the necessary aseptic conditions of these and adjacent parts, has proved insurmountable. The ordinary means of endeavoring to effect sterilization have all their inherent defects. The gargle, swab, spray or douche from the mechanical standpoint are lacking in a greater or less degree, in some essential feature. As Young has pointed out, when the mouth is opened for douching, swabbing or gargling, the parts, particularly the fauces, are at once thrown into an unnatural position, and many of those bacterial hiding places are at the same instant covered up and protected from contact with the reagent applied. Moreover, the reagent can only be in contact with the area to which it is applied for an inconsiderable period, and probably what little good results from such unnatural methods is effected by the reagent left on the surface that mingles afterwards with the saliva and is carried in the manner just described to other parts.

When soluble tablets or lozenges are used the mouth, fauces, etc., are not forced into any artificial position; the reagent dissolved in saliva and carried along by the muscular movements of deglutition flows for a considerable period over the surfaces to which it is desired to apply it; and what is of great importance in diseases of these parts associated with the presence of bacteria, the antiseptic is enabled by these muscular movements to follow the bacteria to their anatomical lairs. Gargling is ineffective in a great measure when employed by adults and, of course, is an impossible procedure in the case of infants and young children.

Results go to show clearly, and naturally my experience coincides with that of the many nose and throat specialists who have given testimony on the subject that for throat disinfection gargling possesses few advantages, but on the contrary several serious disadvantages; that spraying is but little better than gargling, while swabbing and douching though more effective have their drawbacks.

I am convinced after carefully experimenting with gargles and sprays that in the great majority of cases these remedies fail to come in contact with the parts affected. Application of antiseptics to remote regions of the throat by means of the swab are effective, but this treatment necessitates frequent visits of the patient to the physician, and as many individuals suffering from mild throat affections are well able to pursue their daily employment, the interval between the treatment is too long to be of real benefit. The same may be said of the douche. The principle of the lozenge or tablet, then renders it almost ideal, that is from the mechanical standpoint, in the treatment operative or otherwise of the throat. When placed on the tongue and sucked slowly as it should be sucked, it reaches all the remote and to other remedies inaccessible cavities of the throat, and is retained there long enough to thoroughly bathe the parts.

However, the question cannot be considered solely from the mechanical point of view. In order to produce the aseptic condition required, the tablet must not only be mechanically effective but must exert a germicidal action of considerable strength. Before discussing the bactericidal and antiseptic effect of tablets it may be as well to consider some of the agents more commonly used for sterilizing the throat. Phenol for instance, if employed in a solution strong enough to be of any real antiseptic or bactericidal value is also strong enough to injure the mucous membrane, and probably, on the whole, does more harm than good. Solutions of peroxide of hydrogen are both antiseptic and non-toxic but are too mild in their action to be of true service. Formalin, soda bicarb. salicylic acid, permanganate, chlorate of potash, boric acid, salts of mercury and numerous other substances and preparations, are useful in certain cases, and perhaps, some of them are indispensable on occasions, but in a gen-

eral way an antiseptic and bactericidal agent which was introduced ten or eleven years ago in the treatment of throat diseases and affections serves its purpose well.

This agent is formaldehyde administered in the form of tablets. Although as already pointed out, throat specialists recognize the tablet from the mechanical point of view as the best mode of conveying an antiseptic to the parts affected and of retaining it there long enough to exert its action effectively, the tablets in ordinary use have their manifest defects. Some are deficient in germicidal strength and others are unpleasant. None, indeed are satisfactory from all points of view. The object to be desired is a tablet with all its mechanical advantages which at the same time throws off an antiseptic in volume sufficient to be of value, yet is innocuous, palatable and pleasant. Sometime ago my attention was called to a tablet known as the Formamint tablet which I learned upon investigation to be a chemical combination of formaldehyde and milk sugar, the milk sugar neutralizing the irritating effect of formaldehyde, which up to the time of the introduction of this combination had militated against the internal use of formaldehyde, a substance, of course, known to have exceptional merit as a bactericide and antiseptic. Each tablet which weighs 1 gram contains approximately .01 gram of formaldehyde in chemical combination with milk sugar, citric acid, menthol and oil of rose being added for the sake of palatability. Such a tablet is in the first instance palatable, a quality of the greatest importance in the treatment of throat affections, its administration as has been previously shown is easy, and by mixing with the saliva it reaches and thoroughly bathes every out of the way part of the throat, an essential virtue in a remedy of this description. As for its antiseptic properties, many investigators have demonstrated by careful experiments that Formamint tablets are remarkably effective. Among these investigators are Seifert (1) Rheinboldt (2) Daus (3) and Young (4). In fact, all the experiments proved that Formamint possesses in a high degree, the faculty of rendering the saliva not only aseptic but in addition antiseptic, so that the tissues coming in contact with it are disinfected in a satisfactory manner. Experiments thus indicate that Formamint should be used in the disinfection of

the mouth cavity and the throat as a substitute for gargles, and clinical experience, including my own observations, has confirmed these results, a matter to which I shall refer later.

An especial advantage which Formamint possesses over other mouth and throat disinfectants is that the tablets are distinctly agreeable to the taste and therefore particularly well adapted for the use of young children. As noticed previously, gargling is impossible with children, and the various methods employed to treat throat affections in children present difficulties, whereas Formamint is not only taken with pleasure and even avidity by children, but is moreover effective. It has been pointed out by Dr. C. Bachem (5), that fever patients who are apathetic are frequently not in a position to cleanse their mouths properly; in such patients Formamint therefore is of very definite value as a simple and easy yet exceptionally effective means of disinfecting the teeth, and mouth cavity, which counts for much in the treatment of nose and throat affections. In this connection, however, it must be clearly understood that Formamint does not altogether take the place of mechanical cleansing, and in many cases it can only be used as an adjuvant.

Since its introduction, Formamint has made much headway. Its history is therefore long, and while it would be out of place to trace this history at length, it may not be amiss to briefly refer to the results of clinical and laboratory observations made and published by medical and research workers in this field. Rosenberg (6) was one of the first to introduce Formamint to the notice of the medical profession. He called attention to the value of Formamint as a means of local disinfection in cases of tonsillitis, diphtheria and scarlet fever, with their infective throat infections and laid special stress on the fact that by their use the temperature of such patients was promptly lowered. Meredith Young published the results of a lengthy and somewhat elaborate series of investigations which confirmed in a striking manner those made by Rheinboldt. The conclusions reached by these writers were in complete accordance with those come to more recently by workers in the Lederle Laboratory of New York, which showed the great destructive power of Formamint upon the various pathogenic bacteria infecting the mouth and

pointed out a question of great importance, to wit: that the germicidal properties of Formamint were not diminished in the presence of organic matter. With regard to the harmlessness of Formamint, this very essential though negative property is attested by many observers. Even in the case of very young children, no untoward effects in its employment have been reported. Kramer describes 20 cases of scarlet fever among which, following the use of this agent, there was not one fatality. Weiss (7) who has used the combination in acute and chronic pharyngitis, reported good results. Zwillinger (8) found it of value in follicular and catarrhal sore throat. Wyatt Wingrave (9) used it with satisfactory results as means of procuring oral asepsis in operations on the throat, and Sir Felix Semon in Albutt's System of Medicine recommends these tablets in the treatment of acute tonsillitis. In the main, the outcome of my experience of the value of Formamint in the treatment of certain throat affections corroborates that of many British and German investigators. My experience with Formamint has been in cases of lacunar tonsillitis, follicular tonsillitis and peritonsillitis before and after the evacuation of the abscess. I have also treated cases of pharyngitis, postoperative cases of tonsillectomy and the angina accompanying scarlet fever. In cases of lacunar, follicular and peritonsillitis the results of treatment by Formamint were highly satisfactory, although, of course, other and routine means of treatment were practised. Before and after a tonsillectomy, Formamint is a useful agent in bringing about those aseptic conditions which are necessary to a successful issue. I may say that recently I have been employing these tablets in the treatment of rheumatic sore throats, but the time has been too short to pronounce a definite opinion as to their efficacy for this purpose. However, if the theory of Poynton and Paine that rheumatism is caused by a diplococcus which gains ingress by means of the tonsil and thence if not ousted infects the entire system, is correct, and medical views now appear to be veering in this direction, the logical treatment of such a sore throat would be by bactericidal agents. In the throat ulceration of scarlet fever I have employed Formamint and have satisfied myself that the effects were beneficial.

Herewith are some case histories:

CASE 1. Female, age 13. Suffering from a severe inflammation of the tonsils and surrounding tissues of the throat, accompanying scarlet fever, temperature 103.4, inability to swallow, complained of severe pain. Was relieved of the distressing throat symptoms in twenty-four hours from the time of the administration of Formamint. Patient took one tablet every two hours for a period of twelve hours and then at longer intervals. The temperature was reduced on the day following the first administration of the remedy and in three days the throat symptoms had disappeared.

CASE 2. Mrs. R., age 35. Acute tonsillitis. Temperature 101.5, painful and difficult deglutition, with considerable swelling. Recovered rapidly from the attack the temperature being normal on the following day after the administration of Formamint. Previous attacks had lasted for some time.

CASE 3. Minnie H., age 7, general inflammation of the throat, temperature 103.2. Intense pain upon swallowing, pain extending to both ears, headache, was given Formamint, one tablet every two hours and then at longer intervals, with good results. The temperature gradually decreased, the pain diminished and a recovery was made in four days.

CASE 4. Male, age 47, suffering from a specific ulceration of the mouth and throat, was locally treated with Formamint in conjunction with anti-specific treatment and the throat symptoms disappeared rapidly.

CASE 5. Mrs. G., age 28, consulted me for a throat affection which upon examination proved to be a peritonsillar abscess on the left side. Considerable bulging and marked fluctuation. The abscess had reached that stage when medical treatment would be useless and surgical measures were resorted to. A free incision was made to give vent to the pus, which as is usually the case, was of a foul nature. Formamint was then given, one tablet every two hours, in conjunction with constitutional treatment. The temperature at the time I first saw her was 104.3, headache, inability to swallow, nausea, pain extending to both ears, marked external tenderness and swelling. On the day following the operation and the administration of the tablets, the temperature had dropped to 100.5, the patient could swallow with some degree of comfort and on the fifth day was discharged cured. It has been my practice to irrigate the cavity after the evacuation of pus every twelve hours with an antiseptic wash. This is painful but in this case the administration of Formamint rendered the above procedure unnecessary.

CASE 6. Mrs. R., age 37, whom I saw in consultation and who had been ill for three days with a severe acute affection of the throat which involved the larynx as well as the tonsils, uvula and pharynx, temperature 103.4, intense pain and inability to swallow, marked difficult breathing. The patient had been without food for forty-eight hours, was extremely weak, and her condition was apparently becoming worse. I considered the patient in quite a serious state, the dyspnea was increasing and the symptoms were extremely serious. The

cause of the infection was of streptococcal origin. The case was treated by injection of antistreptococcus serum and Formamint tablets were prescribed one every hour. After six tablets had been administered deglutition became less painful, nourishment was taken with some difficulty and there was a decided improvement in the symptoms on the whole. The temperature on the day following the commencement of treatment went down to 100. Another injection of antistreptococcus serum was administered. Formamint tablets continued at longer intervals and the patient made a complete recovery without further developments.

My experience with the use of Formamint has been entirely clinical and on the whole, has been distinctly favorable. The tablets are by no means a panacea for all and every throat affection, but are valuable in the treatment of certain forms of tonsillitis and pharyngitis and as a means of disinfecting the mouth and throat they are of quite general utility. In some diseases of the throat they are useful as an adjunct to other treatment.

It is my opinion that Formamint tablets are of considerable value from a prophylactic point of view and should be prescribed for those who come into contact with patients suffering from infective throat troubles as a means of prophylaxis. Formamint tablets are useful as preventive measures against the spread of diseases of germ origin such as influenza, diphtheria, scarlet fever and so on, and although it may be presumptuous to speak dogmatically on this point, the tablets may be said to afford fair means of protection against the contraction of certain infective diseases.

The features in which Formamint tablets appear to me to excel are—from the mechanical standpoint; from their undoubted antiseptic and bactericidal action; from their nontoxicity; from their agreeable taste which render them suitable for children; and from their portability.

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The Rational Treatment of Visceroptosis.

A great deal has been heard during recent years of intestinal stasis. In fact, chronic intestinal stasis with its accompanying disorders and sequelæ is now a well recognized clinical condition. Physicians and surgeons on both sides of the Atlantic acknowledge that the conclusions of Sir W. Arbuthnot Lane and others are in the main correct, and that obstinate constipation and intestinal stasis are responsible for many of the ills to which human flesh is heir.

In connection with the occurrence of these conditions a somewhat impressive fact may be noted—that they are more frequent by far among women than men. Now there must be a definite reason for this, and according to Dr. R. Murray Leslie, of London, visceroptosis with its associated adhesions and kink, plays the most important role in producing intestinal stasis. Further, there is a very large preponderance of cases of visceroptosis among the female sex, and consequently intestinal stasis is much more common among women and a most fruitful source of disorders of all kinds. With regard to treatment, it may, therefore, be pointed out, that as visceroptosis is responsible for most of the cases of intestinal stasis in women, remedial and curative measures should be directed to correcting the sagging of the viscera.

Among the first to appreciate the need for supporting the weakened abdominal wall was Dr. Katherine L. Storm, of Philadelphia. Dr. Storm not only recognized this need but carried her views into practice and devised the binder which goes by her name. This binder supports the lower part of the abdomen, the direction of pressure being where it should be, upwards and backwards. Thus the upward intra-abdominal pressure of the binder counteracts the tendency to dropping of the viscera, which is exactly what is required. Therefore, the Storm Abdominal Binder by keeping the viscera in their proper place is obviously a most important factor in relieving and curing intestinal stasis and indirectly in warding off many diseases of a more serious nature. Dr. Storm has rendered great service to the medical profession and to her own sex by bringing out an abdominal supporter which fulfills the purpose for which it was intended.

The War in Flanders.

The big war has been full of big surprises. One of the greatest of these surprises has been that the expected widespread epidemic of typhoid fever in the trenches at Flanders failed to materialize. There have been cases of typhoid, of course. Among such an enormous number of men—constituting a good-sized nation in itself—under such conditions, it could hardly be avoided altogether. But there has been no such plague as was looked for. And there is no question that this surprise of the war is due, almost wholly, to the use of typhoid prophylactic vaccine. Almost a year after the beginning of the war there had been but 22 deaths in the English expeditionary army—many times less than in an ordinary city of the same population, and not a single death among the inoculated soldiers.

There is no reason whatever why this immunity should not be enjoyed by citizens in peace, just as well as by soldiers in war. To this extent, at all events, "military" methods in civic life are not only permissible, but highly desirable. You, doctor, can cut down typhoid fever in your locality just as it has been cut down in the British army, by the use of the same means. And you are even better off than they, for you can pick and choose your vaccine, and assure yourself of the best—i. e. Abbott's. If you fail to specify Abbott's you do so at your own and your patient's risk.

True Corpus Luteum.

Such good results have been reported from the use of true Corpus Luteum in 2-grain doses that Armour & Company have decided to put up 2-grain capsules in bottles of 50. Physicians now may obtain true Corpus Luteum by specifying Armour's in 2 and 5-grain capsules and 2-grain tablets. This is also furnished in powder, one oz. bottles, for dispensing in any sized dose that the medical man may desire to use.

True Corpus Luteum is the therapeutically active product. The false substance appears to be worthless; therefore in order to get results the physician should specify Corpus Luteum (Armour) in all cases where the effects of Corpus Luteum are desired.

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Science and War—Its Indictment and Defence.—Looking back over the past twelve or fourteen months we can view most details in connection with the world-war in much clearer perspective. It has been freely said that this was a scientific war, and no little chagrin has been felt by earnest people generally that so many of the forces on which our civilization has been built, were, "when the bugle sounded," diverted instantly, as a matter of course, to the uses of war. The wonderful advances in physics, chemistry, optics, electricity, higher mathematics—every branch of human study—have been adapted with the most marvelous industry and ingenuity to the effort to kill and destroy. Nothing that could increase ever so little the capacity for killing has been overlooked. Suppressing every instinct of human kindness, the acme of cruelty has been constantly sought with the diabolical purpose of causing the maximum of suffering and anguish. With the employment of asphyxiating gases it would seem the limit of human power to work harm and injury has almost been reached. Only one more awful act of animosity and antagonism remains undone—the widespread dissemination of the germs of pestilence—and *this has been calmly discussed as more than a possibility!* It does not seem possible that nations so recently enjoying the benefits of free association

with each other, and the advantages each had to offer, could be so promptly and completely dominated by such ferocious hatred and enmity. The bonds of modern civilization were thought to be so strong and the community of financial, social and scientific interests so powerful that war was looked upon as an utter impossibility. Then again it was felt that modern man was different. So much progress had been made in every line of human endeavor, and the growth of intellectuality had created such a moral poise that all questions of international importance were sure of being considered philosophically and rationally. Finally, all human emotions, particularly those of anger, antipathy and hate, were believed to be so subordinate to mentality and reason that it seemed preposterous to think of them as ever again swaying men's minds to the extent of bringing mankind to the brink of war. No, peace was the normal—the physiologic—status of nations; war was disease, an abnormal condition that the judgment, intelligence and common sense of civilized people would prevent—it was hoped—for all time.

Then the cataclysm came, and it was realized that forces, elemental and all-powerful, still controlled the actions and manners of mankind. Straightway the belligerent nations entered upon a carnival of

slaughter such as the world had never seen. Science was invoked as never before and as Sir Wm. Osler points out in a masterly address (London *Lancet*, Oct. 9, 1915), it has not only made killing possible on a scale never dreamed of before, but has enormously increased man's capacity to inflict suffering and injury on his fellow men. As a consequence of the greater efficiency science has brought to warfare, we may expect that at least five or six millions of men in the prime of life—picked men physically and mentally—will be killed. In two years of the present war more men will be wounded and killed than in all the wars of the past century.

At the bar of civilization, science stands arraigned, then, as having made war more awful, more terrible in its capacity, not alone to kill men and blot them out so that not even a single physical fragment remains, but to cause the most frightful suffering and leave its victims broken, distorted things, veritable caricatures of human beings. Thus charged, science is indeed a monster, a Frankenstein men have created that will destroy and bring the most poignant misery and distress to humanity. Were this all that could be said for science, and our only knowledge of its services were of those it has given to the promotion of efficiency in warfare—the slaying, disabling and terrorizing of human beings—the verdict would not be long in doubt.

But Let Us be Just.—As Osler says there is a credit balance on the other side, and even though science, as applied to war, outrages every conception people have had of its beneficent and benign influences, the great good it has done—and is doing—in many directions should not be discounted. For example, let us bear in mind the re-

markable results obtained in the prevention of sickness and its incidental suffering; the control of pain and the avoidance of unspeakable tortures by the skilful use of anodynes and anesthetics; the decrease of wound infection and the improved treatment of wounds; the wonders of surgical technique; the shortening of the period of convalescence; and finally, the wonderful progress that has been made not only in transporting and caring for the wounded from battlefields to base hospitals, but in restoring them to health and physical efficiency in the shortest possible time. Then, in connection with the prevention of disease, science has proven its beneficent powers in at least two very important directions. For a while at the beginning of the war, tetanus bade fair to take heavier toll of the wounded than shot or shell. The soil of Belgium and France, where the fighting was taking place, was loaded with tetanus germs and their spores. The great majority of wounds promptly became infected with tetanus—and the situation was appalling. A single case of tetanus is terrible enough for those who have to see it, but ten, twenty, or even more cases in active convulsions all in the same ward, in the words of a physician who had to undergo the experience, "is worse than any *Inferno* the human mind can picture." The use of anti-tetanic serum was started as soon as possible, and at once the whole aspect of the situation was changed; the effect was almost miraculous. No triumph of prophylactic medicine has ever been signalized in a more spectacular and positive way than this stamping out of tetanus by prophylactic inoculation. So much for the control of one great scourge. Quite as noteworthy and if not as spectacular in effect, certainly no less far-reaching in its results has been the conquest of typhoid fever by preventive inoculation. In former

wars, disease in the form of typhoid fever has caused the great bulk of the losses. In every campaign, the struggle with typhoid has been the despair of the medical staff and a constant bugbear to the officers in command. Now all this is changed and this disease, that up to a few years ago was more deadly than "shot, shrapnel or shell," today is practically eliminated as a serious menace to army health. How great a triumph this is for science must be evident to any one who is familiar with the histories of previous wars and the sinister part formerly played by typhoid fever in the mortality and incapacitation of troops. The thing that has been achieved would seem astounding, yet, marvelous, if it had occurred in a less strenuous period, or the passing events were not of a magnitude and importance to disturb our sense of proportion. It is bound to rank, nevertheless, with the greatest blessings of science, and the enormous decrease in human suffering thus effected, as well as the conclusive demonstration of the possibilities to be derived from its routine use, will go far to swell the credit balance.

The splendid services rendered by the X-ray, and electricity in various forms should not be passed by without a word of appreciation. Through their aid, surgery has been able to accomplish much that would have been otherwise impossible. The telephonic probe, the giant magnet, and other electrical agencies have all fulfilled their mission.

Finally the notable advances surgery has made in treating wounds, and saving life and limb, must be recognized. Frightful as have been the effects of modern projectiles and high explosives, with extensive injury and destruction of tissue, the resources of surgery have not been lacking. Virulent

infections have been met and their control promptly effected; wounds seemingly beyond the possibility of repair, have been approached with courage and hopefulness, and through the utilization of antiseptics, painstaking technique, and all available auxiliaries such as vaccines, manipulation, massage, and so on, results of the most gratifying and significant character have been obtained. Never has science shown so conclusively the great fundamental principles of wound treatment, the importance of cleanliness, free drainage, the avoidance of pressure or interference with local circulation, the rational use of antiseptics and the prevention of contamination. In addition to these great fundamentals of wound treatment, many new and valuable facts have been gleaned, such as the importance of changes of posture, the wisdom of frequent bacteriological and chemical examinations, etc., all of which have placed the future management of wounds on a much more definite and scientific basis. The old, uncertain and empiric methods will no longer be tolerated. In showing that wound treatment is a many-sided problem, science therefore has rendered another great service to humanity—and the credit balance grows.

The practical instruction of soldiers in sanitation should next be considered. The people as a whole have long been avid for knowledge on health matters and the past decade has witnessed very substantial progress in this direction. As the public has become posted on hygiene and sanitation, a tangible and gratifying improvement in the health of the people has followed as a logical sequence. It has been in the armies of the great nations however, that education along sanitary lines has received most careful attention, with the result that when the

crisis came, in spite of the enormous size of the armies engaged, the character of the conflict, and many other adverse conditions, disease, particularly of an infectious nature, became conspicuous by its absence! Thus the practical application of sanitary principles has shown what may be expected when put into effect intelligently and with due regard to the end sought. It is an object lesson to the world at large, and once again science has clearly demonstrated the good it can do when directed aright.

This, then, is the story. With the facts before us what shall the final verdict be—for or against science? From the ruck of warfare, the confusion of conflict and the mighty struggle for supremacy, men will someday get back to a calmer, more considerate state of mind, and be able to view things with clearer vision. Then will it be seen that the prostitution of science which today so many bemoan, is the fault, not of science itself, but of the elemental passions and animal instincts which still control mankind.

Instead, then, of condemning science and anathematizing it for the horrors and frightfulness it has perpetrated under the direction of men at their worst, let us rather find inspiration and unlimited promise for the future in the infinite good it has brought to the warring people—in spite of their reversion to primordial instincts and domination by the bestial lust of combat and carnage.

Dark and depressing may be the “cloud of destruction, suffering and horror” for which science seems so largely responsible—but back of it there is a silver lining woven from the good that has been accomplished, the lessons that are being taught, and the wonderful opportunities every day is unfolding which must soon dissipate the darkness and

depression. In other words, brighter days are ahead, and when these come, science will need no defence. Perverted and misdirected it may have been and under these conditions productive of much evil; but divest it of man's pernicious influence, and science will stand forth what it always has been—and always will be—a great beneficent force, with unlimited power for promoting the welfare of all mankind.

The Questionable Character of Much of Our Data on Cancer.

Cancer to a large extent still remains an unsolved problem. The really wise man—a very different thing from the clever educated man—is said to be one who is conscious of how little he really knows. Thus the wise man is never conceited but always modest. How refreshing it would be if some of our cancer experts would show their wisdom and modesty by confessing how little they know concerning cancer! To be sure much has been learned with regard to this dread disease which should be widely disseminated in order that the public may be able as far as possible, to guard against its inroads and development. On the other hand, all statistics sent forth should be accurate, and they should never be published until they have been proven to be so. Dr. Francis Wood, Director of the Cancer Research Laboratories at Columbia University appears to be of this way of thinking, for at the Rochester Convention, he declared that after all what is known about cancer is relatively little, that there are many problems for the elucidation of which further data are urgently needed, and the collection of which should begin at once. Dr. Hill, Medical Officer of Health of London, Ontario, in discussing the question, said that

deaths from cancer were annually increasing, and if they continued in the same proportion *they would be as numerous by 1925 as deaths from tuberculosis*. This may be so, but has Dr. Hill reliable data to substantiate this statement? It is notorious, in this country, at least, that statistics regarding the prevalence and increase of cancer are open to grave question. It is generally believed that cancer is prevalent and increasing, but many hold the view that the great bulk of the assertions in regard to its prevalence and increase are not founded on sound data. To rely without question on most of the statistics is to "lean on a broken reed," especially when the careless and hasty manner in which some of these figures are collected is taken into consideration. It seems to us that the average man will do well to take the strictures of Dr. Wood to heart, and weigh with infinite care the hasty statements of the alarmists in regard to the rapid increase of cancer. It is easy to throw the public into hysteria concerning the dangers of insidious diseases like tuberculosis and cancer, but it should be remembered that the only ones who gain from such public hysteria are the quacks. A public campaign of education concerning tuberculosis, cancer and health matters generally has much to commend it. Knowledge of an evil or a menace, as some one has said, is the surest way of overcoming or avoiding it! But too great care cannot be used to keep from creating senseless fear in those whom we would educate. Such a result is indeed a calamity for it means not only a defeat of a commendable purpose, but what is far more serious, an addition to the ranks of those whose sudden increase of morbid fears make them ready prey for the charlatan and quack.

The danger in sun baths is discussed editorially in a recent number of the *Jour. A. M. A.* (Aug. 14, 1915) and attention drawn to the deleterious influence of prolonged exposure of the body to the direct sunlight, especially in those who have been unaccustomed to it. The conclusions reached in this editorial are identical with the views advanced many years ago by Colonel Woodruff. For a long time before his death, Colonel Woodruff fought almost single handed to get the profession to see the grave harm apt to result from prolonged or unwise exposure to the sun's rays. Especially did he try to arouse medical men to the injury liable to be done to tuberculous patients by the use of sun baths or the routine advice to "spend as many hours as possible in the sunshine." In spite of evidence of the most positive character and arguments so sound and irrefutable that it did not seem any one could remain unconvinced of the correctness of his contention, medical men went on ordering sun baths for their tuberculous patients.

As so often happens when a man is striving to deliver a message, a great many misunderstood Colonel Woodruff's views, and thought him opposed to sunlight in any quantity and under all conditions. This was erroneous. What Woodruff sought was to get medical men to realize that the administration or application of sunlight required as careful and intelligent discrimination as any other therapeutic agent, that its random or haphazard use was the great evil, and finally that the action of sunlight needed thorough scientific study. Never did he deny the value of sunlight in certain cases but knowing that its action was potent for harm in many others, his plea was for greater care in selecting those apt to be

benefited and in avoiding those whom experience had shown liable to suffer injury.

When the profession failed to understand him, he never despaired, as many a weaker, less earnest worker might have done, and in the face of indifference, criticism, and opposition, he kept faithfully on. For years he was as a prophet crying in the wilderness, and it seemed almost impossible to arouse medical men, even those of the highest intelligence, to the danger and harm presented by the direct rays of sunlight. Now the *Journal* comes forward and takes the very stand Woodruff fought so strenuously to get the profession to realize and accept. It is a splendid vindication and one more illustration of the fact that truth sooner or later is bound to prevail. What a pity that Woodruff could not have lived to see the foremost medical publication of the country teaching the danger in sun baths and pointing out the need for intelligent care and discrimination in the application of heliotherapy! Gratified as he would have been for the triumph of the views he so long had tried to get the profession to consider and comprehend, it is entirely probable that he would have questioned the propriety if not the justice of any writer who could express such positive opinions without a single reference to the work of the man who first advanced them and whose voice for so long was the only one heard in their support. Fortunately the scientific world knows how earnestly and faithfully Woodruff taught the danger of excessive exposure to sun rays, and will not be niggard in giving credit to the one to whom they know it belongs.

The hospital question is looming large in current medical affairs and although it has not come to an issue yet, the day is not

far distant when in justice to the rank and file of the profession, the whole proposition must be taken up and placed on a better and fairer basis. The general practitioner, in large cities especially, finds it impossible to secure hospital care for his patients without the necessity of giving them up to another practitioner, not infrequently an active competitor. Thus the economic side of the question is becoming acute—for patients will go to hospitals. In the majority of instances people would prefer to remain under the care of their regular physician. Provision ought to be made, therefore, whereby the original attending physician could continue in charge of a patient who from necessity or otherwise seeks hospital conveniences, and the hospital surgeon occupy a position more nearly like that of the consultant in private practice. This would protect the interests of the original medical attendant without prejudice in any way to the patient or hospital. Unfortunately, under present conditions a patient who enters a hospital severs all relation with his original physician—unless this physician happens to be a member of the hospital staff—and even then if the patient has to go to a department of the hospital with which his doctor is not connected or at a time when he is not on duty. As a consequence, every practitioner of medicine—in New York City for instance—knows that sending a patient to the hospital means with the rarest exception that he has seen that patient for the last time in a professional capacity. No one will deny that this works a serious hardship on the medical men who do not have hospital connections, and these of course are bound to constitute the great majority. It is quite obvious that the question is too complex and

has too many factors that must be considered, to admit of any full and comprehensive discussion at this time or within the confines of so brief an article as this must necessarily be. There is much to be said in extenuation at least—if not in excuse—of the present system of hospital management. But the condition is becoming intolerable to many a practitioner and unless present hospitals recognize the situation and make some provisions whereby the physicians of the community may command hospital care for their patients without relinquishing them completely, the doctors will take the matter into their own hands and organize institutions that will meet their professional needs. General practitioners are not seeking to do appendicectomies, gastro-enterostomies or major surgery generally, but there is a large amount of ordinary emergency surgery which every physician is qualified to handle, and any number of medical cases, which medical men in active practice should have the opportunity of taking to a well conducted hospital, with its many obvious advantages, and there direct their treatment, without let or hindrance from any one. We have no idea of advocating surgery by the under qualified or inexperienced. The restrictions in this direction should be increased and made more rigid, not diminished. Operative surgery must be surrounded by every safeguard, and every effort enlisted to raise its efficiency. There can be no question of this. But the general practitioner should not have the legitimate field of his activities curtailed by the denial of hospital facilities. His license to practice confers upon him very definite rights and privileges and if he cannot secure these through existing agencies, he will sooner or later take steps to develop agencies through which he can.

Advances in the Treatment of Uterine Fibroids.—For a number of years, it seemed to be quite settled that the only satisfactory treatment of uterine fibroids was recourse to surgery, and in the literature the surgeons seem to have had it all their own way. In the past three years, however, there seems to have been an increased activity in the study of uterine hemorrhage and fibroids, for numerous articles on the purely medical side of this subject have appeared in American medical literature.

It can be said without qualification that the advances made in this particular field are of such a nature that the dicta of the surgeons cannot now be accepted without question; in fact the operative treatment of fibromyomata is gradually being superseded and a number of operations made unnecessary by the successful outcome of several forms of medical treatment.

A study of the comparatively recent literature indicates that the treatment of uterine fibroids and the associated menorrhagia is divided into three distinct categories: 1st, the local use of radium; 2nd, the application of the X-ray, and 3rd, the administration of mammary extract. Some very remarkable results have been reported from the clinic of Howard A. Kelly, of Baltimore, and he and his associates have worked out a means of treating uterine fibroids by the application of radium which promises much. Robert Abbe, of New York, has also made several interesting communications on the subject.

More recently, several reports by Lange, Pfahler and others have appeared in regard to the value of the X-ray in the control of menorrhagia and uterine fibroids. The former reports twenty cases treated by X-ray

exposures, the Coolidge tube being used. Lange reports that an artificial menopause can be elicited in any patient, irrespective of age by means of the X-ray, and that in many cases the method is of extreme value. Pfahler concludes that the Roentgen therapy is a very efficient adjunct, and that deep Roentgen therapy stops the hemorrhage and causes a gradual disappearance of the tumor.

It has been known for a number of years that the X-ray exerts a remarkable specific inhibiting effect upon the ductless glands as many a bold Roentgenologist has learned to his cost, for the majority of the fatalities amongst physicians resulting from their intimacy with the X-ray are undoubtedly due to profound changes in the glands of internal secretion, which were directly or indirectly the cause of death.

In Lange's report, the case histories of several cases of menorrhagia in young women, and in an addenda to his last and most recent paper, he remarks that he has produced a permanent menopause in a girl of nineteen years. We are constrained to believe that this use of the X-ray is inadvisable, since as will shortly be shown there are other means of controlling excessive hemorrhage of this character, and the artificial production of as serious a phenomena as the menopause at nineteen years should only be brought about in an extreme case, and in such a manner as to conserve the essential internal secretory capacity of the gonads.

The mamma has been demonstrated to be an internal secretory organ, and suitably prepared extracts of these glands are shown to exert an antagonistic action to the ovaries, just as do the X-rays; and since mammary therapy contains potentialities for

good in this field of therapeutics without the serious and far-reaching results of the X-ray, we cannot believe that Roentgen therapy should be used in the treatment of fibroids in young women and girls—save only where mammary therapy has been thoroughly tried and proved to be ineffective—and like all medical procedures it is by no means a panacea. Operative procedures would seem to be a good deal more in order than X-ray exposure—in this particular class of cases—for it is quite possible that the cause of the hemorrhage may be controlled by skilful surgery, without virtually destroying the internal secretory capacity of the ovaries by the X-ray, and thereby causing the deep-set nervous and psychic disturbances that so often accompany the menopause, and especially the artificial menopause.

We believe that our present information warrants us in assuming that our most potent remedy for uterine fibroids and the associated hemorrhage is radium, and since this is not available by more than a very small fraction of the medical profession, and certainly altogether out of question in general practice, the next best procedure is the use of mammary extract which can be easily secured by any interested physician and used in most cases with much satisfaction. We do not deny that the X-ray is good in certain cases, but it should not be used save only when all other medical procedures have failed, and this does not seem to have been done in the most of the cases reported in the literature at our disposition.

Persisting Against the Skeptics.—It has become a byword that any real discovery

in the domain of science, and especially in medicine, must needs be held up to contumely and ridicule for a varying length of time before it is accepted and become a part of "orthodox medicine." This is just as true in one phase of medicine as in another. For instance in a presidential address made some years ago before a prominent British medical society, Brampton made the following frank declaration: "If any daring member has introduced a subject bearing on medical treatment, it has been with an apologetic air and humble mien, well knowing that if his remarks had any reference to the utility of drugs in the treatment of disease they would be subjected to good-humored banter, and received by those sitting in the seat of the scornful with amused incredulity."

Investigation into the causation of disease has brought almost as much "amused incredulity" at those who have devoted their time and talents in this direction; and the recent death of Dr. Carlos J. Finlay of Havana, which we have referred to in a former issue, affords a glaring example of this unfortunate tendency on the part of the medical profession. As far back as 1881, Finlay convinced himself by the most painstaking and intelligent observation that a certain species of mosquito was the agent by which yellow fever was conveyed from one person to another. As was the custom, and still unfortunately seems to be, Finlay's announcement with all its enormous significance was ignored. In fact it was laughed at; and not until after the Spanish-American war, when attention was particularly directed to the incidence and control of tropical diseases among the U. S. troops, was the subject given

the consideration that it deserved.

As the result of the work of our army medical department, based upon Finlay's scouted notions, yellow fever has been conquered and in these days is of the rarest occurrence; and while the persistence and heroism of our brave men—all of them risked their lives and some of them died—is to be commended, Carlos J. Finlay and his memory will always merit the grateful praise of humanity.

Had it not been for the persistent faith of this Cuban physician, he would never have succeeded in convincing the world of the truth of his contentions; but because he refused to be denied *for many years*, at last persistence triumphed over skepticism and humanity benefited. So will it always be.

The subject of infant care is today one of the most important medical men are called upon to consider. For a long time the fearful mortality of infants during the first two years of life has been a reproach to the medical profession, not on the basis of any culpability in this regrettable state of affairs, but more particularly because the profession had not been able to correct this situation that so evidently constitutes a grave menace to the welfare of communities generally. More recently there has been a notable increase of interest in the subject of infant mortality and as the far reaching importance of the different phases of the question has been realized, gradually but none the less surely, this interest has developed into a great national movement for the promotion of child welfare. That a campaign so earnest in character and so broad in its scope will be productive of positive results is a foregone conclusion. Time

however, is a very essential factor in demonstrating any change in mortality rates and several years must lapse before any definite deductions can be drawn as to the effect of this propaganda.

The problem of infant feeding has been recognized of vital importance, for if any one fact has been more clearly demonstrated than another in the study of infant mortality, it is that more infants are sacrificed by faulty and careless methods of feeding than by any other single cause.

An article appearing in this issue by Dr. Josephine Hemenway Kenyon will be found of very great practical interest, as showing the careful systematic efforts being undertaken by the medical profession to educate mothers on this all important topic of feeding young babies. Dr. Kenyon's article is not a medical paper and was read at a public meeting held under the auspices of the Public Health Education Committee of the Medical Society of the County of New York. It is so replete, however, with sound, common-sense teaching, and exemplifies so well the kind of information the physician is called upon to disseminate, not only in public conferences with the public, but also in every day practice, that we have welcomed the opportunity of publishing it.

Dr. Kenyon has given the subject very careful thought and knows what mothers need. Her paper is a veritable mine of information on the proper nourishment of babies, both breast and bottle-fed, and aside from the wealth of practical material given may well serve as a model for the instruction of mothers on this all important question.

Instructing the Public.—We cannot speak too highly of this line of work for it unmistakably approaches the problem

of health promotion in a way that offers greatest prospects of accomplishing its successful solution. There never was a time when the medical profession was giving so much time and effort to the education of the people on all matters pertaining to health and the prevention of disease—and this is as it should be.

We may be neglecting selfish interests, but in striving to teach the people how to keep well, to save their children and to decrease disease, we are practicing medicine in its best and truest sense. All things work out in the end pretty nearly as they should, when motives are clean and efforts sincere. Right and justice usually prevail sooner or later, and it is hearty, whole souled instruction of the people in regard to diet, hygiene and sanitation that will lead the intelligent classes to think of the doctor as a health specialist quite as often as a specialist who treats disease. In other words, with the public realizing not only the importance of preventing disease, but the great skill, intelligent and trained medical men have already acquired in this direction, the majority of people will cultivate the habit of consulting their medical adviser regularly to enlist his skill in keeping them well, instead of as formerly waiting and seeking his services only when they are sick.

Already the practice of medicine has changed materially. Many physicians, if they will stop to analyze the services they are rendering their patients today will be astounded to see the extent to which preventive measures are being called upon. The development of vaccines, the increase of our knowledge on immunization, the determination of more definite and precise information concerning the hormones and activators of the body, the attainment of more accurate knowledge of the chemistry of the body especially in respect to metabolism

and elimination; progress along these and many other lines of investigation have given the careful doctor many new and rational ways of preventing disease and maintaining health. As knowledge thus extends, the efficiency of the skilful physician will increase accordingly and he will be called upon more and more.

The one great thought we wish to emphasize is that medical men owe it to themselves to be prepared—and well prepared—to meet the demand for comprehensive information on all matters bearing on the maintenance of health. And in supplying the information desired, as occasion requires, let it be so accurate and helpful that it will not only impressively indicate the possibilities of scientific medicine, but will show that it is the educated and experienced physician who is best equipped to give it. The whole proposition—for the profession collectively as well as for the doctor individually—resolves itself down to a question of preparedness.

The people are receptive—they are waiting and willing to be convinced. It only remains for medical men to prove their ability to preserve health and prevent disease. With this established there will be no dearth of patients nor will medicine lack for honor, respect and credit.

The hour is striking. May the physicians of the country realize that the old order is passing, that a new era is at hand!

Fatigue Dyspepsia.—To the careful student it will not be surprising to learn how frequently fatigue is a causative factor in the production of digestive disturbances. By this is not meant overwork of the digestive organs themselves, but rather a general tiredness or slowing up of the cells, manifested by a reduction in their activity as a

whole. Rankin (*Brit. Med. Jour.* June 19th, 1915) suggests that the main factor in many depressed conditions is the decreased activity of the gastrointestinal tract, and that this disorder occurs more frequently in persons who have inherited a "shoddy nervous system." This is especially true when unusual circumstances have called upon the nervous system for more service than it has been able to render.

Another view of this subject is related to the chemical influences upon indigestion as compared with those of purely nervous origin. Fatigue affects the glands of internal secretion almost before any of the other organs, and Crile has repeatedly shown that the kinetic system is very susceptible to both internal and external influences. These influences, which may be either mental or physical reduce the hormone-producing capacities of the body and hence decrease the normal stimuli to digestion. Whether the principal factor in fatigue dyspepsia is nervous or humoral, the end is the same in both instances—a more or less complete breakdown with varying manifestations of indigestion together with the usual phenomena of neurasthenia. There is loss of weight, hope is disturbed and broken, the appetite is irregular and capricious, the patient is constantly tired, the mental powers are reduced and mental concentration and memory are much less active than previously. Added to this, the patient suffers from depression, irritability, restlessness, and a firmly established conviction that the world is out of joint.

Obviously the treatment of such cases is complete rest, both digestive and physical. This explains the excellent results that are so often obtained from the sanitarium treatment of such cases where medical attention at home has failed.



The Blood Pressure in General Practice.—One of the most important advances in clinical diagnosis has been the perfection of the sphygmomanometer, and its popularization by various interested manufacturers. As a result of this, the estimation of blood pressure by the general practitioner as well as in hospital practice, has become both easy and accurate. There are numerous instruments on the market and according to Goodman, while the mercury instruments have some advantages over the spring instruments, the latter are considerably more convenient for transportation and application.

In our present state of knowledge it is clear that reduced tension is frequently as important a diagnostic indicator as increased tension, since in many cases of endocrinous insufficiency, there is a reduction in the power of the heart as well as in the tonicity of the vessels, which is only to be learned by using the sphygmomanometer. In such cases it is fortunate that the administration of suitable glandular extracts, or combinations of extracts, will not only cause an increase in the blood pressure, but other associated benefits which far outweigh any advantages connected with the reestablishment of a more nearly normal tension. Obviously, in such conditions the therapeutic indications as well as the regulation of treatment is impossible without the estimation of blood pressure and every physician should have at least one instrument for this purpose.

In a recent communication, "Blood Pressure in General Practice," Goodman (*N. Y. Med. Jour.*, 1915, vol. cii, p. 169) makes some pertinent remarks which are worthy of restating here: "No physician should attempt the reduction of blood pressure without controlling at every step his medication by the sphygmomanometer. In the treatment of hypertension, an important fact must not be lost sight of, namely, that high blood pressure is often a necessary accompaniment of altered function and struc-

ture, and were it not for this raised blood pressure, life could not be carried on with these functional or organic changes. Cardiac strength and peripheral resistance are necessary for the maintenance of blood pressure at a certain level. This is true in health, and is true in disease, with this added feature that hypertension, if permanent, creates a new physiological limit, not 130 and not 180, but perhaps 200. One can never say what this physiological limit is for any given individual, but it must be determined, and below it blood pressure cannot be reduced with safety any more than blood pressure in health can be reduced below the normal physiological limit."

It is unfortunate that good blood pressure instruments are still so expensive. The cost of the sphygmomanometer, which is usually \$25 seems to us rather excessive, since the manufacturing cost cannot be much over six or at the outside seven dollars. It is predicted that before long, the very best spring instruments will not cost more than twelve or fifteen dollars while a satisfactory mercury instrument will be obtained for the same price.

Quinine as an Antiseptic.—Among the very limited number of "specifics" in therapeutics, quinine probably ranks first. Its destructive action upon the *plasmodium malariae* is definite, invariable, incontestable. It now seems that quinine is to be extensively used in other conditions and that it exerts a very decided antiseptic action in certain infections which are not easily controlled by other means.

In a recent issue of *The Lancet* (Sept. 4, 1915, p. 538) Kenneth Taylor, Pathologist to the American Ambulance near Paris, gives some experimental experiences with the hydrochloride of quinine as a general antiseptic. His tests were principally upon artificial gas bacillus infections in guinea pigs, and his conclusions have a special interest in practical medicine, even though "gas gangrene" is so rare in civil practice.

Taylor found that suitable doses of a 2½% solution of quinine hydrochloride show a marked bactericidal activity against the *B. aerogenes capsulatus*; have strong laboratory evidence of value as a general antiseptic; are not harmful either locally in

a menstruum of pus or injected intramuscularly and also manifest a strong antitryptic action *in vitro*, an influence, by the way, which is of the utmost importance in the fight of the body against any infective process, be it gas gangrene or tuberculosis.

While this interesting report is confined to technical and laboratory matters, extensive clinical use of a 1% solution of quinine hydrochloride is now being made in several of the hospitals in France and England; and it seems that a new and important use has been discovered for a time-tried remedy.

The Diagnostic Use of Vaccines.—Besides the therapeutic advantages obtainable from the judicious use of bacterial vaccines, it has been known for some time that inoculations of certain killed bacteria afford a reliable means of diagnosing certain conditions. This has been confined to a few bacteria but recent investigations have shown that similar results are to be obtained with other organisms, in fact that the possibilities are practically unlimited.

Thus in determining the etiology of an obscure urethritis or other manifestation of questioned gonococcic origin, the injection of a full dose of a stock gonococcus vaccine will often be found of very definite utility. If the reaction is marked the gonococcus is probably present, whereas if the injection fails to produce any reaction it almost certainly means that the organism producing the discharge is not the diplococcus of Neisser.

Another condition in which the use of vaccine injections has been of diagnostic significance is in persistent cough with no very definite physical signs to explain it. In such cases, according to Madden (*Lancet*, Aug. 7, 1915, p. 267) "a stock pneumococcus vaccine has a startling effect, a clear indication that the cough is entirely a post-pneumonic condition. Conversely, when stock pneumococcus vaccines have no effect on the cough, one generally finds that the respiratory flora is very profuse and only a mass (mixed) vaccine of the principal cultures is likely to have the desired effect."

Several reports have appeared in recent years recommending injection of different vaccines as a means of differentiating the offending organisms in infectious arthritis.

Observant users moreover, of bacterial vaccines often note from time to time that the benefits obtained are not entirely confined to the disease that is being treated. From all this it would seem that close and comprehensive study of the effects produced by the injection of different vaccines into the human body, can supply us with much clinical information of definite and far reaching importance.

Leonardo Da Vinci, the Universal Genius.—It is interesting in this day of progress not only in science but in warfare, to recall the age in which that world's universal genius, Leonardo da Vinci lived and proved his talents in a letter written in 1582 to Lodovico, Duke of Milan. His versatility is shown and he outlines his various qualifications as an engineer, scientist, architect, artist or painter and sculptor.

We quote in part only as the letter as a whole was quite lengthy. "I have a method of constructing very light and portable bridges, to be used in the pursuit of, or retreat from, the enemy, with others of a stronger sort, proof against fire or force, and easy to place or remove. I also have means for burning and destroying those of the enemy. For the service of sieges, I am prepared to remove the water from the ditches, and to make an infinite variety of faccines, scaling ladders, etc., with engines of other kinds proper to the purpose of a siege. I have also convenient and portable bombs, proper for throwing showers of small missiles, and with the smoke thereof, causing great terror to the enemy, to his imminent loss and confusion. In case of a conflict having to be maintained at sea, I have methods for making numerous instruments, offensive and defensive with vessels that shall resist the force of the most powerful bombs. I can also make powders or vapors for the offence of the enemy. In time of peace, I believe that I could equal any other, as regards works in architecture. I can prepare designs of buildings, whether public or private, and also conduct water from one place to another. Furthermore, I can execute works in sculpture, marble, bronze or terra-cotta. In painting I can do also, what may be done, be he who he may."

These are very startling claims to have been made 450 years ago. Note the fire-

proofing of wooden bridges; the drainage, building of forts and scaling ladders; engines for the purpose of siege; bombs in which to enclose small missiles (shrapnel), and a smoke which would blind and asphyxiate the enemy, vessels which will resist most powerful bombs, (ironclad?) offensive powders and vapors. Did not da Vinci prepare or at least predict many of our recent inventions? He also refers to a flying machine or a real balloon.

It must be remembered that da Vinci excelled in nearly every human attainment, at least, those which we know he engaged in. Of all men who have ever lived, da Vinci has the best claims to fame as a universal genius. We know of his works, that he was one of the most accomplished painters the world has ever seen, having left *The Last Supper*, one of ten of the greatest and *Mona Lisa*, one of the three greatest paintings ever executed by man. That he was great as a mechanic, engineer, anatomist, botanist, physiologist, astronomer, chemist, geologist, geographer and explorer seems established by the many evidences of his activities he left to posterity.

Fascinating indeed is the story of this great master whose achievements have added so much to the enjoyment of mankind.

Hyoscine vs. Morphine.—Hyoscine, sister alkaloid of hyoscyamine, is one of our best narcotics. Like hyoscyamine, but unlike morphine, hyoscine does not interfere with the normal functions, and consequently lock up the excretions. Following a dose of hyoscine, either orally or hypodermically, the patient enjoys a refreshing sleep and awakes without the unpleasant sequels so common after the use of morphine. Further, and of even greater importance, hyoscine can be administered if need be over a considerable period of time without fear of the enslaving habit which surely follows the prolonged use of morphine. This is undoubtedly due to the fact that there is no accompanying toxemia through absorption of the toxic principles developed during digestion of a mixed animal food due to constipation or failure of elimination so universal when morphine is used.

In view of these self-evident facts and the legal restrictions to the use of opium

or its derivatives, it would seem the practitioner should favor its use whenever and wherever an anodyne or narcotic is indicated. It has slight if any effect upon the circulatory system when given in appropriate dose. Another important fact in these days of the suffering and torture of morphine habitues is that it is an excellent remedy in not only morphine but alcohol addiction.

The dose of hyoscine is from 1/90 to 1/120 grain, preferably hypodermically. Orally it can be given in doses of 1/80 to 1/100 grain, care being taken to note the physiological effects. The physiological antidote for hyoscine when an overdose has been given is pilocarpine, providing the heart is sound.

The Physician and the Kitchen.—

"Show me how you run your kitchen, and I'll foretell your family's future," a noted physician is reported to have said recently to a group of college women.


He intended to imply that well-cooked nourishing food plays an important part in determining the future of the man of the house and his family. Too little attention is paid by the medical profession to the culinary department of their own homes—much less of those who come to them for treatment. Some of them, perhaps, think that this does not pertain to them, but is essentially the prerogative of the lady of the house. In many cases, however, if the medical adviser would look into the menus and modes of cooking he would discover good and sufficient reason for the digestive, metabolic and neurotic manifestations which sometimes cause him considerable trouble.

After all, dietetics concerns not merely the kind of food that is eaten, but also how it is prepared, and there are still many sins of commission in the average American kitchen.

The man who gets two ideas at once isn't much better off than he who gets none.—*Louisville Monthly Jour.*

The busy man is troubled with but one devil, the idle man by a thousand.—*Spanish Proverb.*

If there were not two sides to every question, the lawyers would have nothing to do.



What They Are Saying

Cancer and Imperfect Metabolism.—

"While the exact condition of the blood which excites normal cells to become cancerogenic and then feeds them in their luxuriant growth," says L. D. Buckley, (*N. Y. Med. Jour.*, July 3, 1915), "is not capable of demonstration yet, and perhaps never will be, clinical study reveals certain conditions of the system so constantly observed in patients with this disease that there can be little if any doubt that they are contributory elements, at least, to the production of malignant disease; these relate to the conditions of faulty metabolism and faulty imperfect body elimination. These errors may be observed, not only in advanced and recurrent cases of cancer, but also in those which are in very early stages; indeed their occurrence in recently forming cancer, and in patients soon after operation forms a strong argument for their causative relation to the disease.

The evidences of imperfect metabolism and faulty body elimination in cancer are found in the condition of the blood, and in the excretions from the kidneys, bowels, and skin, and minute and careful study will seldom fail to detect these departures from normal in patients with this disease."

Adenoids and Deafness.—"Deafness is a frequent accompaniment of adenoid growths," says Henry Parrish (*New York Med. Jour.*, May 15, 1915). "That the deafness is caused by the adenoids there can be no doubt. I have had cases in which the hearing was improved immediately upon the removal of the adenoid. And in most of the cases the improvement of health, hearing, and general intelligence which follows the operation, within a remarkably short space of time, is truly astonishing. The dull heavy look disappears from the eyes, the vacant expression of the countenance is replaced by a look of interest and alertness; and the boy who was a dullard at school and a laggard on the street is now

full of animation, enthusiasm, and vim. A mother, speaking to me of the great change in her boy following a tonsil and adenoid operation, said, 'before the operation he had no interest in learning, now he loves to go to school. He could not play like other children. When his companions would start to run, he could not keep up with them: he would have to stop to take breath and that made him cross and disagreeable. But now he is full of vitality, as active as a cricket, and when he comes home from school, he rushes in like a whirlwind.' "

Blood Pressure and Insurance.—

"Whereas the average length of human life is greater," says John D. Quackenbas (*New York Med. Jour.*, May 15, 1915), "and there is no evidence that ordinary policy holders are dying earlier than formerly, the average age of dissolution among the industrial policy holders of a great industrial insurance company being forty-two, among the ordinary policy holders forty-six years, greater caution is exercised by life insurance examiners, who are better informed as to the causes of such deaths, in the interpretation of blood pressure. A pressure above 150 at the age of fifty years is regarded as prohibitive by this company. Another prominent company regards a blood pressure higher than the average by about fifteen per cent. as probably safe, accepting the following averages as normal:

Age 20.....	120.....	probably safe	137
Age 30.....	123.....	probably safe	140
Age 40.....	126.....	probably safe	144
Age 50.....	130.....	probably safe	148
Age 60.....	134.....	probably safe	153

Cases of blood pressure exceeding the probably safe limit, when kept under observation, have been found sooner or later to show albumin and casts, and are likely to terminate in Bright's disease or apoplexy. It is to be remembered, however, that many cases of arteriosclerosis have a normal or even a subnormal blood pressure."

Chronic Intestinal Stasis.—

"First," says G. R. Satterlee (*New York Med. Jour.*, June 12, 1915) "it is essential thoroughly to empty the intestinal tract. This is usually accomplished by castor oil in one to two

ounce doses, repeated for three nights. The colon is then irrigated with ox gall, or hydrogen peroxide and normal saline solutions. Two quarts of the stronger solutions are given with the patient in the dorsal position, two quarts of the saline with the patient on the side, and then in the knee-chest position. From six to eight quarts in all are given by a competent nurse. Five or six inches is far enough to insert the rectal tube, as experience has shown that the tube may bend on itself if inserted further. All laxative medicines are forbidden and a laxative diet is prescribed. The ordinary hygienic rules for constipation are strictly adhered to. Further treatment depends upon the character of the constipation. In most instances, we are dealing with atony of the colon. In these patients, proper massage and vibration to the colon will have good results, if given daily for two weeks and every other day for two weeks more. This should be done by the physician himself or an attendant skilfully trained. The ordinary massage is useless. In some instances the intestine, even if sluggish for a long period of years, will be emptied promptly and act for itself within two weeks. In the spastic type, manipulation of the large intestine may be harmful. Belladonna is administered, three times a day and, if necessary, small doses of codeine are given. Rest is enjoined and heat applied to the abdomen, previous to the daily time for stool. It is important to urge both these classes of patients not to worry about their bowels and not to take any kind of cathartics or enemata. In a spastic type, an enema of one pint of hot water, or weak solution of ichthyol at intervals, is allowed. In the atonic type, lack of tone in the muscles of the sigmoid and rectum can be corrected by the measures for improving the tone of the colon. Strychnine or arsenic, as a tonic, is useful in some cases. Electricity has its advocates. If the feces are dry, plain agar agar is given with meals as a routine. Plain water or oatmeal water, in addition to other fluids at meals, is given. Mineral oil is regarded as an adjuvant and is given at first in severe cases or to those over whom control is difficult. It is usually well borne in the simple cases without ptosis. It is not a cure and should be eventually stopped, as no case is regarded as cured that has to depend upon the oil. Relapses

are not uncommon and should respond well to a short time treatment. Other causes for constipation should of course be eliminated. Spasms of sigmoid and rectum may be cured by local applications through the sigmoidoscope. Some cases of hemorrhoids and of fissures, when cured locally, are also cured of chronic constipation."

Medical Education.—"The national board has adopted the standard of the Council on Medical Education of the American Medical Association," says W. L. Rodman, (*Jour. A. M. A.*, June 26, 1915), "and, in addition, will require at least one year of service in an acceptable hospital. These requirements will be rigidly enforced; that is, an applicant must give satisfactory evidence of having had the following:

(a) A diploma from a high school of good standing giving a four year course.

(b) A satisfactory course in science, embracing physics, chemistry, and biology, of not less than one year.

(c) Four years in a medical school of A grade.

(d) At least one year as intern in an acceptable hospital.

The hospital year is required for two reasons. First, no one should practise medicine independently, however well taught theoretically, until he has had practical training under experienced men, and this can be secured only in a hospital. Some colleges require it before graduation, and some States demand it before licensure."

The Growing Recognition of Physiologic Therapeutics.—"Every disease is curable," says A. C. Geyser (*New York Med Jour.*, May 22, 1915), "but not every patient. Day by day the public is taking more and more interest in matters medical. Dosing with patent medicine is lessening, even the scepticism of the patient is manifesting itself against so called 'legitimate prescriptions.' The doctor is forced to recognize the underlying principles of Nature's cure; he is becoming converted to physiological therapeutics. Enormous are the benefits that may accrue to the patient through recognition on the part of the physician of the principle that the blood corpuscles, white and red, are all important in the fight against bacterial disease."



WHAT MAKES A CITY HEALTHFUL?

BY

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The most valuable asset of a community, as of an individual, is health. When an individual has once lost health, there is nothing in life which can in any measure compensate for this. No one will seriously contest the proposition that health is the most valuable asset of the human race.

The efficiency of a community, must depend in a large degree upon the health of its individuals, the units of which it is made up, and in the last analysis the health of a community as a whole is but a composite picture of its individual components.

In earlier times, the lack of knowledge as to the cause of disease rendered futile many well-intentioned efforts to improve the health of communities, but with an increase of scientific knowledge this situation has been radically changed.

We have now the knowledge necessary to meet intelligently all sanitary problems concerned with the preservation of life and health. All that is necessary is intelligent direction in the expenditure of money for the purposes in view.

It should be clearly understood that, with certain minor limitations, any community can purchase any degree of healthfulness

or immunity from disease that it is able or willing to pay for. The money that is expended for the purpose, however, must be wisely and intelligently spent, the expenditure must be directed by scientific authority; then the result can be almost positively assured.

Witness a most striking modern example, perhaps the most striking one in all history, the Panama Canal. Under the former French régime, when questions of sanitation were ignored, the result was a monumental failure because of the frightful handicap to the progress of the work from sickness and death.

Under American supervision, a tropical and pestilential region has been converted, at a relatively small expense, into an unusually salubrious district. In many communities this history has been repeated, though in a smaller and less striking fashion.

There are certain fundamental problems in the matter of public health which must always be solved. Among these are: *First*—provision for a pure and abundant water supply; *Second*—proper plumbing of the dwellings and an efficient drainage and sewage system; *Third*—proper disposal of the city waste; *Fourth*—proper paving and care of the streets; *Fifth*—adequate parks and playgrounds; *Sixth*—proper housing of the people; *Seventh*—proper planning of the city's growth: All of these mentioned have to do with the comprehensive and in-

telligent development of the great public works of the city.

In addition, there are the administrative problems, connected with the public health, no less important, such as: *First*—sanitary surveillance of the infectious diseases, with all that this involves; *Second*—the adequate supervision and control of food supplies, especially milk; *Third*—the proper sanitary supervision of the public schools and their pupils; *Fourth*—the recording and utilization of vital statistics, etc.

Unless each one of these problems is met and solved in a liberal and scientific spirit, no community at the present time can be considered as having fairly met its responsibilities to its citizens or to be fully prepared, without serious handicap, to enter the race for increasing population and industrial and commercial supremacy.

We are constantly reminded of the remarkable industrial development of modern Germany; and no one can visit the great German cities, like Berlin, Dresden, Munich, Leipzig, Frankfurt, Hamburg, without being profoundly impressed by the great wisdom and broad gossip shown by the municipal authorities in providing for the present welfare and future growth of these cities through comprehensive schemes including everything which contributes to the health of the inhabitants, and the esthetic development of the city.

There science has drawn the plans and written the specifications along the lines in which development has taken place and chance has had no part in the result.

One great obstacle in the development of municipal public health work is the lack of trained men, with permanent tenure of office, to administer sanitary affairs. It must be evident enough to any intelligent person that the ordinary training of the

medical man is absolutely inadequate for a sanitarian. The problems of the family physician or the specialist are not the problems of the health officer, and yet in this country it has been considered quite enough, as a rule, to select any physician who was willing to take the position of health officer, with its totally inadequate compensation, and trust safeguarding of the most precious possession of the city in his hands; and it has been considered quite proper to change the incumbent with, at least, each change in the political complexion of the state or municipal government.

The financial authorities are always reluctant to make adequate appropriation for sanitary purposes, and especially for the administration of sanitary affairs. The best illustration I can give of this fact is America's largest city—New York where the problem of the public health has been very difficult to solve. The first step taken was the creation of the Metropolitan Board of Health, organized under a special Act of the Legislature in 1867, passed as the result of the activities of a sanitary commission appointed the previous year. The conditions in New York were so insanitary, and the death-rate so high, that at last the people became aroused and the Metropolitan Board of Health was endowed with autocratic powers which no other sanitary authorities have ever possessed. The death rate in the borough of Manhattan had risen at that time, as high as thirty-six or thirty-seven per thousand of the population. Last year in the greater city it was less than sixteen.

In 1887 cholera threatened New York and, in the presence of its menace, larger appropriations were made, including an appropriation to provide increased hospital accommodations for the infectious diseases;

and then again in 1892, the people and the authorities became greatly alarmed because of the menace of another cholera outbreak.

Hamburg and Altona were suffering terribly from the pestilence and a number of vessels, with cholera cases on board, were detained in the lower harbor. The Board of Estimate and Apportionment, the financial authorities who had been deaf to the request of the Health Board for additional funds for extending the work, were now ready to listen to any request.

The bacteriological laboratories, the disinfecting stations and a system of disinfecting, and the extension of hospital facilities were all immediately provided. The establishment of the bacteriological laboratories of the Department of Health in New York City marked an important development in sanitary work in this country, and, perhaps one might properly say, in the world.

These were the first municipal bacteriological laboratories established and led to the introduction of bacteriological methods in the diagnosis and surveillance of the infectious diseases. They also resulted in the introduction of more scientific procedures in connection with sanitary work generally. The action of the Board of Health in New York City has been followed by the sanitary authorities of every important city in this country and in Great Britain, and to a considerable extent on the continent of Europe.

Such were only some of the menaces to public health which the Department of Health had to grapple with, but instances are enough that where a definite advance has been made in the public health work in New York, it has resulted from the agitation created by some specially unfavorable or alarming conditions.

Only at such times and by taking advantage of opportunities thus offered, with

us at least, has it been possible to obtain such additional appropriations as were necessary to extend the work of the Department of Health. How shortsighted such a financial policy is needs hardly to be pointed out, nor how enormously greater than the expenditure involved is the return in every instance.

The difficulties in the way of solution of the sanitary problems of New York are probably greater than exist in any other city in the world because of the great complexity of the population and the large proportion of foreign-born inhabitants who speak only their own languages and live in most insanitary dwellings, under most unfavorable conditions, and who are almost inaccessible to sanitary inspectors.

The density of population which far exceeds that of any city in the world, further complicates the problem. In different districts our population varies from one or less to the acre, to the densest districts in which there are nearly two thousand to the acre. The Whitechapel district of London contains only about three hundred and fifty and the most densely populated parts of Paris, Prague and other continental cities have less than four hundred.

Notwithstanding these facts, as a result of continued agitation and progress, first in one line and then in another, with better paved and cleaner streets, more parks and playgrounds, better food supplies, better housing, the reduction of overcrowding, a closer supervision of infectious diseases, the inspection of the public schools, larger hospital accommodations for infectious diseases and various other sanitary measures, the death-rate has slowly but steadily fallen from the high level of 1865 and 1866, when it was thirty-five or thirty-six per thousand in the borough of Manhattan, to less than

sixteen as was the case in 1909 and 1910.

This rate compares not unfavorably with London and Berlin, which have the lowest death-rate of any of the great cities of the world.

My experience in this city leads me to believe that the best results can only be obtained by the sanitary authorities who, in their efforts to improve conditions in any community, have the hearty cooperation and support of the medical profession and of the people of that community.

It is a sad but indisputable fact that too often these are totally lacking. The enforcement of sanitary orders almost invariably brings temporary hardship or loss to some individual, and if the enforcement of these ordinances is to be conditioned solely upon willingness of transgressors to obey, little result will be obtained.

If political influences are permitted to be brought to bear for the rescinding of an order for the abolition of a nuisance or the vacation of insanitary premises which are a menace, or of any other sanitary orders which are likely to be issued, the power for good of the sanitary authorities will be limited.

It is in this direction, particularly, that the necessity becomes more apparent for the hearty support of the sanitary authorities by the general assent of the community, and the insistent demand that a competent and conscientious health officer shall not only be supported in his work but that he shall be insured permanent tenure of office so long as he discharges faithfully his duties. The faithful health officer will almost certainly antagonize some, and perhaps numerous, politicians and he must be protected from political influences in his work.

MUCOUS COLITIS.¹

BY

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As a preliminary to the discussion of this much talked of condition, I would state my belief that mucous colitis is much more common than generally supposed, that it is frequently unaccompanied by colic, and that it may be at times a cause rather than a result of chronic neurotic illness or invalidism. This conception differs from the usual, which postulates the presence of at least three features, viz., constipation, colic and an underlying status neuroticus. But since stool examination and colon lavage have come into vogue, it has been found that many cases exist without ever having colicky attacks; and since intestinal toxemia has become well known, it has been noted that in a number of instances the neurosis has been made practically to disappear with the disappearance of an accompanying intestinal toxemia. Therefore the colic and the neurosis may be considered incidental to the disease, and symptomatic in nature rather than fundamental.

The distinguishing feature in mucous colitis, and the only diagnostic one, is the passage at irregular intervals of a large quantity of mucus with few or no other products of inflammation. Though the condition often leads to colic, it is not of necessity accompanied by pain; though it is met with in neurotic persons, it is not of necessity associated with a neurosis; though it is a mucus-forming disease, it is not of necessity accompanied by evidences of active inflammation. All of these conditions may

¹Read before the New Rochelle Medical Society, April 12, 1915.

be present, but the disease may exist without any of them. A frequently overlooked associated condition, however, and one that makes mucous colitis a serious disease because of its far-reaching effects on health, capability and longevity, is intestinal toxemia.

The mucus discharged may be soft and translucent and apparently freshly secreted, and if mixed with the feces may not be very obvious till the feces are washed in a stool sieve. But more frequently the mucus is dried out or coagulated, so that it appears in plaques, shreds, strings, skins or casts. The strings may be two or three feet in length; they are often taken for worms. The membranous nature may not be obvious until a piece is floated out in water. There is no evidence that this mucus is protective in character.

Besides mucus, the stools may contain intestinal sand and blood. The sand occurs in large amounts in only a few cases. It is composed mainly of calcium phosphate, is hard and gritty, and is capable of severely irritating the colon, rectum and anus. Blood, occult or visible, has been present in the stools of a number of my cases. Mummery reports its presence in 60 per cent. In my cases it has frequently been found also in the mucus, though only those pieces of mucus which had a brownish color were tested.

Pathology.—There is nearly always some degree of chronic colitis, this varying from a very slight inflammation of the mucous membrane to a badly cicatrized condition following dysentery. It probably favors absorption of intestinal poisons. In addition in many patients there is laxity of the abdomino-pelvic walls, with general visceroptosis and falling of the kidney, especially that of the right side, or ptosis of

the proximal portion of the colon with movable cecum. There may also be other conditions which affect the alimentary tract directly or reflexly, as chronic appendicitis, cholelithiasis, pelvic inflammations, etc. As a rule, some portion of the bowel is found in a spastic state, and this is usually the descending colon or sigmoid flexure. With this is frequently found an atony of the cecum and the ascending colon. This atony is in some instances probably incurable because of a failure of innervation, i. e., absence of Auerbach's plexus. Absence of bile has been held by some as the cause of the condition, but in many of our cases the reaction for bile pigment in the stool was strongly positive.

Diagnosis.—This rests (a) on the history of the characteristic strings or casts in the stools or of the occurrence of stools of practically pure mucus, (b) on the finding of the strings or casts or abundant mucus in a specimen submitted by the patient, or (c) on observation through a sigmoidoscope of the mucus clinging to the wall of the sigmoid flexure. Sigmoidoscopy is not, in my opinion, of very great importance as a diagnostic measure, though it should be performed for the information it may give. In a suspected case, one may obtain the mucus by one or more test colonic lavages or a full dose of castor oil.

The reason for the patient's call upon the physician is seldom the mucous discharge, unless he thinks the membrane is a worm or a piece of intestine; but it is usually some accompanying manifestation, either digestive or nervous, the most notable being flatulence, persistent constipation, abdominal pain, and lack of mental and physical vigor and endurance. Strangely enough, patients frequently fail to speak of mucous stools unless interrogated by the

physician. If mucous colitis is sought for only when there is colic many cases will be overlooked.

Abdominal Pain.—This is present in less than half the cases. It may consist of soreness in any part of the abdomen, or may take the form of attacks of severe colic or cramps which may show in any part of the colon from cecum to sigmoid flexure. These cramps have at times been localized to such an extent that they have simulated acute surgical conditions, so that in many instances abdominal section has been performed under the diagnosis of appendicitis, gall-stones, stone in the ureter, acute obstruction of the bowels, or duodenal or other perforation. However, the cramp is not associated with fever above 100° F., or a leucocytosis, it is accompanied by a state of great nervous tension, it is prone to change its site and move along the colon, and it is relieved by a free evacuation of mucus from the bowels, so, as a rule, its character may be recognized. Persistence of mild cramps or soreness has been the cause of many exploratory laparotomies for chronic conditions.

The cramp is the result of the attempt of the bowel to expel the offending mucus. It probably occurs not with the soft readily passed mucus, but only when the mucus has been retained until it is desiccated or coagulated so that it acts as a mechanical irritant. The tenacity with which this kind of mucus clings to the mucous membrane is remarkable. It is with difficulty removed even with forceps, and von Noorden has been "able to determine at autopsy that the mucus may be so tightly adherent to the bowel wall that it cannot be removed with a strong stream of water that is allowed to play directly upon it from a hydrant." It is well to remember, however,

because of our use of colon lavage in the treatment, that the mucus in situ can probably be softened and loosened by prolonged soaking in water.

The cramps come on in paroxysms, (most frequently at night), and if success is not obtained in the expulsion of the mucus they may recur a day or a week later. These patients feel pain very keenly and are prone to be highly neurotic at the time of the attack, hence they may writhe or scream with the colicky pain, and implore the physician to give relief. The condition in these colic attacks has been compared with that in bronchial asthma, in which there is great nervousness, muscular spasm and a collection of thick tenacious mucus. Some of my cases have had both conditions. Such spasmodic states of the bronchi and colon have been attributed to heightened vagus tone (vago-tony). Some have found an association with spasmodic dysmenorrhea, others have found hypothyroidism.

The mucus, acting as an irritant, evidently induces spasmodic contraction of a portion of the intestine. But this is not the pain-producing portion, for, as shown by A. F. Hertz, not contraction, but distension of the bowel is the cause of pain. Thus the pain comes from the increased pressure in and consequent forcible distension of the portion of the gut above the contraction, due to the material and gas brought down by peristaltic waves made highly active by an endeavor to force these past the obstruction. Undoubtedly at times the stringy mucus is gripped at the point of spasm, and so cannot be loosened. The pain ceases if the peristalsis is strong enough to overcome the obstruction.

The colic is always preceded by a period of constipation, the constipation being frequently of the spastic type in which the

descending colon in particular is contracted so that it feels like a cord. This contraction is not ordinarily accompanied by pain. In many of these cases the cecal wall is thin and atonic, there is splachnoptosis, and the abdominal walls are flabby, so that intestinal stasis is pronounced. As in women this causes pressure on the pelvic organs, many of these women seek gynecologic treatment and come away usually with one or more operations to their credit, but often without a cure.

Treatment.—This is preventive and symptomatic. It is directed towards the prevention of the accumulation of mucus, and to the removal of the associated conditions, such as colic, constipation, intestinal toxemia, disturbed stomach conditions, flatulence, and depressed general health. We shall take up first the treatment of the abdominal pain or colic, and then the treatment of the condition after the attack of colic or when there is no colic.

1. *The treatment for the attack of colic* resolves itself into (1st) Measures to relieve pain and neurotic symptoms, and (2nd) Measures to promote evacuation of the mucus.

The first of these is attained by rest in bed, a large dose of bromide by mouth, one or more hypodermics of atropine sulphate gr. 1-50 and codeine sulphate gr. $\frac{1}{2}$, and hot applications to the abdomen in the form of hot water bag, poultice or stupe, or a hot bath. On account of habit formation in neurotic subjects, morphine should not ordinarily be employed, but it may be where the recurrence is not frequent and the attack is very severe. The best single drug is atropine.

For the evacuation one may use a large dose of castor oil by mouth, or colonic lavage with normal saline or a solution of

sodium bicarbonate 5j to 0j, given warm and at low pressure (two feet). It may be impossible to get this up into the colon at first on account of the spasticity, but persistence may result in success and the result is worth trying for. Irritants should not be employed in the already highly sensitive colon. The castor oil acts by making vigorous peristalsis. This coming from above the mucus tends to separate the mucus from above downward, and to carry it onward past the site of the spasmodic obstruction. With the passage of the peristaltic wave the obstructive spasm is abolished.

After these evacuating measures or in lieu of them in some cases, it is wise to inject slowly into the colon one-half to one pint of olive or cottonseed oil, to be retained over night. To aid this a towel may be placed over the anus. Often the combination of castor oil by mouth, codeine and atropine hypodermatically, and the olive oil injection will result in a deep sleep, with the passage a few hours later of the oil and abundance of mucus, and complete relief with no recurrence for a long time.

2. *The treatment after the attack or in cases without colic* is designed (a) to prevent accumulation of mucus, (b) to overcome constipation and intestinal toxemia, and (c) to improve general health.

(a) *To prevent accumulation of mucus*, one of the best remedies is castor oil once or twice a week, and this may be supplemented by colonic lavage every day for a week, every two or three days for two or three weeks or longer if deemed necessary, or once a week for long periods of time. For colonic lavage the patient should be on the back, or in refractory cases in the knee elbow position, to allow the fluid to reach the cecum. Some time preceding the lavage, he should have emptied the bowels, as

the starting up of the defecation reflexes will prevent proper lavage. The liquid used may be tap water, saline, or sodium bicarbonate 5j to Oij, of course sterilized (sodium bicarbonate is changed to carbonate by heat). If the mucus is not loosened at the time of the irrigation it may be passed one or several hours later. I always consider that an irrigation is a failure if no water is retained to be evacuated later or if the water returns clear at the outset, for obviously in such cases the liquid has failed to get past the descending colon or sigmoid.

To lessen the mucus production, I have tried belladonna or atropine for many days at a time, but without avail. To promote its production, in the hope that this would prevent its desiccation and favor its expulsion, I have tried ipecac, also without avail.

(b) *The treatment of the constipation and intestinal toxemia* is that of any form of constipation. There should be insistence on a daily movement of the bowels but restriction of the use of enemata and colon irrigations. I have had patients who came to think that any abnormal sensation could be removed only by enema or irrigation, and acquired the habit of using these several times a day. If there is ptosis of the abdominal viscera, or laxity of the abdomino-pelvic walls (and these are exceedingly common), the patient should wear an inelastic binder for mechanical support, and should be put on exercises to help the abdominal muscles. I have called attention to these in an article entitled "Simple Measures in the Treatment of Chronic Intestinal Stasis," *International Journal of Surgery*, April, 1914.

Diet.—This may have to be modified according to the condition of the stomach and upper bowel (achylia, hyperchlor-

hydria, duodenal ulcer, etc.), but in general at the outset it should be of the bland lacto-farinaceous type. Later there may be a gradual transition to a coarser type with much vegetable and fruit. But there should be at all times limitation in the amount of readily putrefactive proteins, as in animal flesh, eggs, beans, peas and lentils, these being replaced, if possible, by much milk in the dietary. The coarse diet at the outset, as advocated by von Noorden, is likely to give rise to gastric disturbances, particularly flatulence, and it is to be remembered that an excessive quantity of coarse indigestible food will do more damage to a sensitive intestine than any mild laxative. Moreover, in a large number of cases there is some real inflammation, and this is best treated by the bland diet. But the diet should be ample, and its quantity insisted upon, for these patients are prone to undereat because of a suspicion that this, that or the other article of food does not agree with them.

Laxatives.—The best in these cases is probably liquid paraffin, but this may require to be supplemented with phenolphthalein, cascara, or an aloin, belladonna and strychnine pill each night. Cascara may gripe because of the spastic bowel. Agar-agar may be useful in some cases, but may form too good a medium for the bacterial growth. Salines may be employed for a short time, but not indefinitely as they make an entirely abnormal stool. Drastics should be avoided. Calomel or blue pill is not contraindicated and may be useful as a weekly or occasional dose. I have already spoken of the use of castor oil weekly or semi-weekly and the colon lavage. Hemorrhoids are a bad complication as they prevent the use of either castor oil or lavage.

A measure of great value, especially if

there is chronic colitis, is the retention of eight to sixteen ounces of olive, cottonseed or mineral oil over night, every night for a month, a piece of rubber sheeting being placed on the bed and a folded napkin over the anus to avoid mishap. A capsule much in favor and apparently of value is that containing castor oil from $2\frac{1}{2}$ to 10 minims with salol $2\frac{1}{2}$ to 5 grains, given four times a day.

Surgery.—If there is any definite surgical condition in the abdomen such as appendicitis, or cholelithiasis, adhesions, kinks, bands, these should be corrected. In sixty-six cases Mummery found surgical conditions as follows: in 14 adhesions causing kinks or obstructions, in 5 chronic appendicitis, in 2 inflammation of appendages or displacement of uterus, in 7 cancer, in 1 stricture of sigmoid. In persistent cases the bowel itself may have to be treated by surgical measures, viz.: (1st) *For cleansing and medicating the colon*, an artificial opening such as by appendicostomy or caecostomy, for the purpose of permitting daily irrigations through the opening. These must be continued for from six months to two years (Mummery) and the procedure is not, in the author's opinion, a valuable one. (2nd) *For overcoming stasis*, such as plication of the caecum, fixation of movable caecum, ileo-sigmoidostomy, ceco-sigmoidostomy, partial colectomy, and complete colectomy. The indications for radical surgery and the choice of surgical procedure I shall not attempt to discuss here.

(c) *Improvement in the general health may be obtained by:*

1. *Occupation, recreation and rest in proper proportion.*—The patients should get up before breakfast and not lie in bed in the morning, should lie down when possible for one or two hours

after the mid-day meal, and should retire early. They should not receive too many visitors or have pressure of social or business engagements, or unnecessary responsibilities added to the necessary ones. For example, a school teacher should not take extra college courses on Saturday and teach Sunday School on Sunday; a business man should not spend his evenings on club committees or in study. Yet some recreation must be insisted upon, preferably attendance at games in the open air.

The great rule is that patients must *never get unduly fatigued*; yet I believe they are best off if they are not allowed to shirk all responsibility. Those with money tend to do so, and are prone to become chronic invalids, self-centered, hypochondriac, "hipped" on themselves, and leading useless lives. They go from one physician to another or to sanatoria, read numerous books about their disease and its treatment, and refuse to permit their ailment to be forgotten for a moment. These patients should be forbidden to read books about their disease or to examine their stools. A sensible nurse is a great help in managing the daily life of the female indolent patient. In every way these patients should be encouraged to use their faculties and their muscles in a sensible manner, neither too much nor too little.

2. *General hygienic measures*, such as cold douches, or alternating cold and hot douches, cold morning baths, cold rubbings up and down the spine, calisthenics, horseback-riding, golf, general massage, with very gentle abdominal massage, and a change of scene to get away from oversolicitous or nagging friends, or from the wear and tear of home and business. It is well to remember that nervous people do

not sleep or rest well in mountainous regions.

3. *Stopping the use of tobacco and alcohol.*

4. *Administration of iron and arsenic* as indicated by the state of the blood, and *bromides* in some cases, *strychnine* in others, as indicated by the state of the reflexes.

In conclusion I would say that I believe that many of these cases are curable, that severity in their symptoms is largely the result of neglect either of patient or doctor, and that often many of the neurotic manifestations disappear with the disappearance of the mucus and the intestinal toxemia, leaving a patient who is not more neurotic than the average. I would especially deprecate such a statement as that made by a speaker at a recent meeting of the Pennsylvania State Medical Association, that "the prognosis is absolutely hopeless, the treatment is *nil*, and the sole prophylaxis would have been to sterilize the grandfather."

COMMON ERRORS IN THE FEEDING OF INFANTS AND YOUNG CHILDREN.¹

BY

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Errors in the feeding of children arise not only from ignorance or carelessness, but are often the result of ill-advised efforts to better the child's condition, or are the application of too little knowledge which is so often a dangerous thing. It is difficult in a discussion of this character to limit oneself to errors and it is hoped that

mothers will draw from this description of what not to do, the natural conclusion of what to do.

It is the rare mother who does not do the best she can for her child. Therefore it should be the aim and ideal of physicians and teachers to increase her capabilities, warning her of the pitfalls into which other mothers have fallen, showing her the fallacy of her preconceived ideas, and guiding her in her efforts to do her best, so that this may come to be better than she knows.

Consider first the nursing baby;—Fortunately there is less opportunity here for mistakes. The mother has less to contend with.

Given a proper sense of her responsibility toward her baby, realizing that through her own efforts she can help or hinder its development,—the thinking mother asks herself what she is leaving undone? Does she put her baby first? Is she leading a quiet, peaceful life, cutting out social pleasures, late hours, dancing, entertaining,—is her diet a good general one free from indigestible dishes and including laxative fruits and breads, does she drink extra fluids as water, milk, cocoa, gruels, and very little coffee, tea or other stimulants, do her bowels move every day? If the nursing mother can answer "yes" to these questions, then she is doing her part.

Unfortunately, nature does not always supply a liberal amount of breast milk, and it may not agree with the baby even though efforts have been made to change the quality by more exercise or a change in the mother's diet.

Nevertheless, it is a distinct error to wean a child except upon a physician's advice. Often carelessness or desires for outside pleasures play an unconscious part in the

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mother's decision. It would, therefore, seem wiser for the decision to come from one with a wider experience than the mother could possibly have. Never wean a baby because some friend advises it or because someone recommends a wonderful food which is "just as good as breast milk."

The nursing mother often makes the mistake of feeding her baby whenever he cries,—especially is this true of the night hours when she is afraid of disturbing the neighbors. Remember that every stomach must have rest periods. The sooner the interval is made three hours, the better for the baby. From the very first the night interval should be lengthened, never waking the child for a night feeding, so that very soon he will sleep the entire night. This not only benefits digestion, but a good night's sleep is insured to the family. If he rouses and seems hungry, a drink of warm, boiled water can be given to the child, the diaper changed if necessary, the clothing straightened and the baby put back in a different position. If breast feeding can be continued for nine months, it is better to do so, provided there is a steady gain in weight and the general condition is good. But breast milk alone for too long a time is not good for the baby. The mother shows the drain upon her system and becomes thin and weak. The child does not gain, becomes fretful and anaemic, and in general poor condition.

Some additional food must be given before the child is ten months old—beef juice, coddled albumin of an egg, strained, well cooked cereal and orange juice can be given with great benefit.

Many people believe that a healthy breast fed baby can be given "tastes" of anything. He is offered bits of table food, often partially cooked or carelessly pre-

pared, with the idea that by taking these things he will be better prepared to digest them when weaned. This is a great mistake. Only food which has been carefully prepared especially for a baby should be given. Can anything more absurd or wrong be imagined than the answer a young mother gave when asked what she fed her little four months girl. "Oh, she takes the breast," she said, "but she really likes sweet potatoes and bananas."

A child should never be nursed after the mother has again become pregnant. Ordinary menstruation, in many cases, has no apparent bad effect upon the child, and is not an indication for weaning unless abnormal symptoms become evident. Very often giving a few bottle feedings on the first day will correct any tendency toward colic or vomiting.

The bottle fed baby presents greater opportunities for error. Aside from the actual food itself, there are many points to be considered which play almost as great a part in the proper development and general well being of the baby as the actual food which is offered. I feel quite strongly that every mother should attend to the actual preparation of the food herself. A grave error lies in passing on this responsibility to the nurse or untrained helper.

Unless the mother takes 15 minutes of her day for this simple task, it will be hard for her to keep track of the details of the feeding. Let her, if it be possible, see to the cleansing and boiling of the bottles and nipples herself. Let her know just what is put in these bottles and be sure that they are immediately put upon ice. The doctor or trained nurse will explain the details to her at first. Or, if the baby is treated in a dispensary, one of the duties of the visiting nurse is to go to the home and actually pre-

pare the formula, explaining the important points to the mother.

The campaign for clean milk has brought the importance of this factor so clearly before the public that it hardly seems necessary to emphasize it. But while you may be buying the best milk in the market or the best which you can afford, remember that it may easily become contaminated after you have received it.

It is a distinct error not to boil bottles and nipples each day, to remove the top of a milk bottle with a dirty fork, to mix the milk in a utensil which has not been boiled or washed thoroughly with boiled water, to mix the cold milk with hot barley water, thus bringing the mixture to blood heat, to cork the bottles with cotton which has not been sterilized or baked, to leave the prepared milk standing in a warm kitchen, or to have someone sweeping in the room while the milk is being prepared.

Milk put immediately upon ice keeps in good condition for 24 hours if it was good milk in the first place. This makes it possible to prepare the total quantity for 24 hours at a time, putting it at once in the individual bottles. Pasteurized milk does not turn sour as quickly as raw milk but if bacteria gain access to it, they develop as quickly as in raw milk. Thus it is easy to see that if pasteurized milk be carelessly treated or left uncovered it might readily become a source of danger to the child, without giving the telltale sour odor or becoming coagulated. This is no argument against pasteurized milk but a caution.

Do not believe that any one food or kind of food must agree with your baby—just because some other child gained upon it or some one told you so. One is apt to keep a child too long upon a definite preparation—to watch the weight first become sta-

tionary, then show a loss, and to feel that because it is a good food the trouble must be in the baby. Not at all! The trouble lies in the fact that you do not realize that each baby's digestion presents a problem. One must actually study to find the food best adapted to it. You cannot change the baby but you can change the food. One child may gain upon one food and another child, upon identically the same food, lose. You ask what food you are to offer if the baby does not do well on the usual preparations? Many times you cannot know.

Only physicians who have studied most carefully the problems connected with the feeding of infants can tell.

There are various types of indigestion recognized, and while a physician who first studies your baby may have to try several formulæ before finding one which agrees with the baby, yet soon he will be able to decide which particular constituent of the food agrees and which disagrees. For those who cannot afford a physician there are excellent dispensaries connected with practically all the hospitals—including the maternity hospitals; board of health physicians; and the doctors connected with the various milk stations and day nurseries. These physicians are only too glad to have normal healthy babies brought to them, to advise as to the details of feeding and to weigh and record the gain in weight.

The Better Babies Campaign has done much to show to parents their limitations of knowledge and the benefits accruing from consultation with experienced helpers.

What is wrong with the way we offer food to our babies? First, we forget that digestion is influenced by outside conditions. No baby improperly dressed, with tight bands across the abdomen, swathed in clothing in a hot, close, badly ventilated

room will digest any food well. Remember that no child should be trotted up and down or violently rocked. These movements interfere with digestion. Nor is it ever necessary to walk the floor with a crying baby. The digestive power is weakened in a child with cold hands, cold feet and a subnormal temperature. But you cannot persuade me that a low temperature of the room alone interferes with normal development.

Children are far healthier if allowed to sleep at night in a cold room with an abundance of fresh air. In our climate the heat can be turned off and the windows widely opened. But the child must be warmly clothed and very little dependence placed upon the bed clothes.

Have woolen night drawers, sweater, mittens, and cap in addition to the blankets. Try this and see how well the baby sleeps and how hungry he will be in the morning. If the baby is still having a night feeding, he must, of course, be taken to a warm room to be changed, and if the bottle is given in the cold room with the child in bed, it must be protected with a warm flannel cover to keep the milk warm.

We are also apt to forget that slight conditions, such as an ordinary cold or other slight illnesses, interfere with digestion and that therefore the food should be diluted for a few days.

Be careful that food is not taken too quickly—that the hole in the nipple is not too large—15 minutes, at least, should be allowed for a feeding. The milk should be warm—not too hot nor too cold. Remember that even with the greatest care the child swallows air while taking a feeding. This is especially true when the opening in the nipple is too large. The reason the child cries 10 minutes or so after a feeding

is not always that he is hungry, but uncomfortable with this accumulation of gas or air in the stomach and must be lifted to an upright position to allow it to escape through the esophagus and mouth. This gas cannot escape while the child is lying down, or if it does, is apt to bring a mouthful of food with it, which probably explains some cases of vomiting after feeding. You can therefore save your baby much discomfort by holding him over your shoulder after a feeding and gently patting the back.

Many mothers forget to give their children warm, boiled water between feedings. Just as an adult requires water to increase the elimination of waste products from the system, so even the tiniest baby should have it. Give it first in the bottle, later from a spoon, and by the sixth month at least, teach the baby to drink from a cup. Have a definite time for offering the water between feedings. One is less apt to forget it.

The total amount of fluid—milk, plain water, barley water or the equivalent, which a child should have in the 24 hours is estimated as about $\frac{1}{3}$ to $\frac{1}{6}$ of its body weight.

Overfeeding is more often a source of error than underfeeding. Giving too large a quantity at a time is perhaps the easiest way to err. There are many books for mothers in which the amount of food for the age and weight of the baby is estimated.

Your healthy vigorous baby may seem hungry but it is not wise to go much beyond the estimated amount. Remember that the weight of a child is a better guide than the age. Also that it is better to give boiled water between feedings than greatly to dilute one feeding in an effort to satisfy the baby.

Children are not often underfed. Conditions of this sort usually result from a mistaken idea of the nutritive value of the food

given the baby. For instance—a mother may have practically no breast milk, yet she continues to put the child regularly to the breast. She does not know that she can determine the amount of milk he nurses by weighing him before and after nursing. This would show her that she was practically starving the child and that he requires, at least, supplementary bottle feedings, if not entire bottle feedings.

Several instances which I can vouch for, illustrate this point. One is that of a woman who was told what a fine "food" barley water was, and she fed her poor little baby nothing but a weak solution of this for nine whole weeks. No milk. The child showed evidences of actual starvation. Another mother could not afford milk, and not knowing that she could go to the milk stations, fed this weak cereal water for six weeks. Often, children need barley water after intestinal troubles, and it is an excellent diluent in a milk formula, but, alone, it does not offer much of nutritive value to the healthy organism. A mother saw "Milk of Magnesia" advertised and, thinking it a new form of milk, bought a bottle, diluted it with water, and fed her baby upon this mixture for ten days. Milk of magnesia, as you know, is an excellent laxative, of great value in a nursery, but is in no sense a food. Other instances might be cited of the use of peptogenic milk powder and water, used without milk, under the mistaken idea that it is a powdered milk.

We will consider next the actual food itself as a source of error. In a discussion of this character no rules for feeding a well baby can be given, and, much less, directions for feeding an ill or poorly nourished child. Without seeing the child, examining him carefully, going over the history of previous foods offered and the loss or gain in weight

on these foods, the various symptoms as vomiting, diarrhea, colic, etc., no physician would be justified in suggesting a food.

Disassociate your mind from the idea of the fluid called milk and think of it as made up of various ingredients in varying proportions, any one of which may agree or disagree with the child. Think of a fluid in which float tiny globules of fat, very light in weight and therefore tending to rise to the top of any container of the fluid. These globules, being lighter, are found at the top of a quart bottle of milk which has been allowed to stand unshaken, and form the cream. In solution are found the milk sugar, the protein and the various salts.

The protein is analogous in your diet to the albumin of egg or lean meat. In the curd of coagulated milk is found one protein, in the whey, another. Modified milk means either diluting milk, or using a mixture of various milks, as that from the top of a quart bottle, skimmed milk, or fat free milk, thus bringing about in the resulting mixture a different proportion of fat and protein. Top milk may mean any number of ounces from the top of the bottle, removed either by means of the Chapin dipper or by siphoning, and contains a greater proportion of fat. There is no advantage to be derived from using the milk from the tops of several bottles, except when a large amount of food is prepared, and is only an additional expense. There are a great many children who cannot digest a large percentage of fat in their food and therefore do not thrive on these mixtures. They begin to "spit up" after feedings, later vomit immediately after or at any time during the interval between feedings, the stools may be soft, then too frequent with fine lumps of undigested fat. The weight may show a gain and the mother may think that she can

disregard the abnormal symptoms, but soon there will be a "slump" and the child show signs of fat indigestion. For this individual baby the high fat feeding is a distinct mistake and very possibly one may have to go to the other extreme and give formulae from skimmed milk to correct it. The general tendency is toward whole milk mixtures. They are far safer and more babies do well on them. Many physicians, at present, do not order the high fat or top milks at all.

What faults can we find with the sugars?

As cow's milk has a lower percentage of milk sugar than breast milk, it has been found possible by the addition of sugar to the formula, to add just so much more nutritive value to the food. But the sugar is never added to the milk just to sweeten it. That would require far too much for the needs of the child. And soon, on too high a sugar content, the baby would develop a repugnance to the food, he might begin to vomit and have sour thin stools—quite irritating and causing sore buttocks. Often a general roughness of the skin develops, which is easily recognized by the experienced eye. These babies may have attacks of colic. Milk sugar has been used for many years. It dissolves easily, adds the same sugar which is found in milk, does not readily ferment and is easily digested.

A combination of dextrin and maltose is also used, as it presents a malt sugar which is even more easily digested than milk sugar and is, in addition, laxative. The amounts of these sugars ought not to exceed, in the dilute mixtures, 1 ounce in a 20 ounce mixture. In the formulae of half milk and half water or stronger, $\frac{3}{4}$ to $\frac{1}{2}$ ounce is all that is required. Cane sugar can be used but in about half the quantity as the others.

The value of increased carbohydrate feeding in cases of malnutrition cannot here be discussed. Needless to say, while a food with a high sugar content can often be given with great benefit to children suffering from malnutrition or marasmus, this should always be ordered and carefully followed by a physician.

There are few errors to be attributed to the protein. In the whole milk mixtures the child can usually digest with ease the fair percentage of protein, and there are few ways in which the mother can give it in excess. Even in the skimmed milks, where the fat is relatively low and the protein relatively high, there are rarely abnormal symptoms.

There is a large class of extensively advertised infant's foods. Probably everyone has a favorite one. They all lack fat, contain much sugar and starch, have more vegetable than animal protein, and not one can be considered as a substitute for milk. They have their advantages in that they are excellent when a sterile food is desired—as during a long journey—or when the cow's milk is of doubtful quality. Often they are used after intestinal upsets or when a food containing a low fat and high sugar content is indicated, or when a slight laxative action from the malted foods is desired. The error lies in considering them as substitutes for milk, in continuing their use over long periods and giving them as the sole article of diet. Scurvy often results from their long continued use over several months. Children fed upon the proprietary foods are apt to be rather pale, sometimes plump, but it is known that they have less resistance than other children and succumb more readily to infection.

The errors in the feeding of older children are more easily understood and it is

unnecessary to go into a detailed account of them, but to mention a few of the usual mistakes.

1. Keeping a child too long on a restricted diet, as crackers and milk. Or continuing a milk diet alone beyond the time at which other foods should be given. Children fed in this way usually show signs of anemia and malnutrition.

2. Failure to give fluids enough in the 24 hours. Giving too much solid food and forgetting that milk should be given as well. Neglecting to give water between meals.

3. No regularity in the hours for feeding.

For a child of from 2 to 4 years the following diet will serve as an example:

Breakfast—7 to 7.30 A. M. Cereal, preferably made from the whole grain, cooked over night, milk, egg, toast or dried bread made from whole wheat flour.

Dinner—The noon meal should be the heaviest of the day. Meat—chop, scraped beef, chicken, white fish. One carbohydrate food—potato, brown, unpolished rice, hominy, farina. One other vegetable—spinach, carrot, beans, peas, string beans, lentils, asparagus. A glass of milk, toast or dried whole wheat bread with butter. Dessert—apple sauce, prunes, junket, custard, cornstarch or arrowroot pudding, bread and rice puddings without raisins.

Supper—The same as breakfast with the addition of apple sauce or stewed prunes if required as a laxative, and possibly a vegetable in addition to or replacing the cereal.

Soups are valuable if made from the water in which vegetables have been cooked, thus adding very necessary soluble salts to the diet. But the same results may be obtained by serving the vegetable in the liquor in which it was cooked. These soups may

be given at the noon or evening meal, but no attempt should be made to replace the milk in this way.

There are, of course, many variations of the above diet.

Other errors are:

4. Allowing a child to eat between meals, nibbling crackers or cookies.

5. Do not allow a child to creep or walk around the house with a piece of buttered bread in the hand. All sorts of infections can be carried to the mouth in this way. Keep the child quiet while eating. Always wash his hands before giving food to hold.

6. Never feed a child with the same spoon which is being used by another person. It would seem as though this caution would be as unnecessary as that against the common use of a pocket handkerchief, but both errors seem only too common.

7. Never let a child select his own diet and consequently eat far too much of any one thing and refuse the other things which his system requires.

8. A common error is not to offer food finely enough divided.

Children do very little chewing and in addition to the precaution of giving the food mashed or put through a strainer or finely minced, teach him to make the effort to chew.

9. Vegetables are seldom cooked long enough. They should be quite soft when offered.

10. Unripe fruits or indigestible foods, as raw vegetables, fried foods or nuts should not be given.

11. Too much sweets—candy or desserts, are only too frequently given. The simpler the dessert the better. Keep a child from knowing the taste of candy as long as possible.

12. Never force a child to eat. The

child who is not hungry when offered only three meals a day, with plenty of fresh air and exercise, and a good bowel movement daily, has need of a good physical examination. There is something more than wilfulness the matter.

Under 10 years of age no child should have raw foods, as celery, tomatoes, lettuce, etc.—vegetables hard to digest as corn or cabbage, such meats as pork, ham, dried or salted meats, pies, pastries, hot breads, tea, coffee, or other stimulants.

This is, of course, the negative side of the infant feeding problem. Let no mother be discouraged. She could not if she tried make all the mistakes mentioned, nor half of the ones which time prevents our discussing.

She will continue to do her best, each day learning more and more, not only what to do but what not to do, and from her own experience adding to the list of the things she will never do again.

INAUGURAL SYMPTOMS OF ECTOPIC PREGNANCY.

BY

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It is the purpose of this paper to report the early diagnostic symptoms of eleven cases of ectopic gestation operated upon by the staff of the First Surgical Division, German Hospital, Brooklyn.¹ In this series no cases were diagnosed before rupture, two were thought to be appendicitis and in one advanced case, the diagnosis of pelvic tumor was made.

At a meeting of the Obstetric Section of

the American Medical Association, held in 1896, Dr. James F. Baldwin, reported five cases of ectopic gestation in which the diagnosis was made before rupture had occurred. No one present, however, had made the diagnosis and had operated prior to rupture. The writer believes from a study of this condition that an early diagnosis can be made in a large number of cases before final rupture and collapse have supervened. According to Huggins, this diagnosis should be made in 80 per cent. of cases. It must be admitted that important symptoms exist in a large proportion of cases upon which reliance may be placed for early diagnosis; that these early symptoms have been lightly considered both by patient and physician. The family physician can not always be blamed for the late diagnosis. The chief obstacle to the early detection of this condition lies in the fact that the initial symptoms are not alarming and as a result the physician is not called sufficiently early. Nor can blame always be attached to the medical adviser for lack of observation for there are cases in which there are no early symptoms. These patients may consider themselves perfectly well and in six hours may be desperately ill. Unfortunately, however, a large number still come to the operator who have suffered for some time from symptoms which should lead the experienced observer to early accurate conclusions. They have been ignored until the classic picture of internal hemorrhage and collapse have supervened.

The chief symptoms of value in the diagnosis before rupture are pain, disturbance of menstrual function, suspicion of pregnancy and genital hemorrhage.

Pain, prior to rupture was a constant symptom in this series. It was mild, intermittent, irregular and progressed in

¹ Reported by courtesy of Dr. Russell S. Fowler, Chief of this division.

severity. Early pain in ectopic pregnancy is due to distention from hemorrhage and increased growth of the ovum. It may express itself first as a bearing down sensation of a dragging character and may be felt first in the sacral region. This may be preceded by a feeling of lassitude. Pain is at first usually mild and does not prevent the patient from doing her housework. Pain is of short duration, and passes away to return with greater severity. There may be an interval of hours or days. Between the attacks there may be complete relief. Later, pain is increased by exertion. It is frequently stated that pain is brought on by work such as sweeping and scrubbing and that the patient was forced to lie down for a few moments. A slight feeling of faintness is common and characteristic. Prior to rupture pain is well localized, to the right or the left as the case may be. Pain invariably occurred before hemorrhage showed itself at the vagina.

There is no morbid condition in which an exact menstrual history is of greater importance than in ectopic gestation. It is difficult to elicit the facts because of the lack of careful observation of this function in a certain class of patients. At times even deceit is practiced. The patient's own observations are of great importance. Difficulties in early diagnosis are at once apparent when we consider that no attention may be drawn to the menstrual function and no significance is attached to the occurrence of slight irregular genital hemorrhage.

One of the most important early signs is thus allowed to go without the consideration which is due it. Without exception in all cases in which pregnancy was not suspected the hemorrhage was considered a retarded menstruation. In this series, men-

struation had been previously regular except in one case. In two cases menstruation had occurred four weeks previously, in one five weeks previously, in two seven weeks previously, and in one three months previously. If the menstrual flow does not occur after four or five weeks, when it has been previously regular, the physician should first suspect pregnancy in the absence of any more plausible explanation. It is during these weeks and prior to the sixth that early pain commences. At this time, the patient should be under close observation. *Rupture rarely occurs before the sixth week. If the physician has opportunity to study his case carefully an early diagnosis can frequently be made.* Pregnancy is rarely suspected unless the patient has actually missed a period and menstruation has been previously regular. Sensations of pregnancy, nausea, and fullness of the breasts are rarely present before the sixth week. The diagnosis of the existence of pregnancy may at this time necessarily remain obscure. It is frequently masked early in ectopic gestation by the occurrence of a flow from the vagina often so near the time for the occurrence of menstruation that the hemorrhage is simply regarded as delayed menstruation. A flow occurring near the time when menstruation is due has no significance to the woman who is occasionally irregular.

In general, there is nothing characteristic in the genital hemorrhage. The blood may be clotted or fluid, dark or bright. It is due to the separation of the amniotic sac within the tube and to the separation of the decidua within the uterus. In the individual case, the hemorrhage may present some difference from the menstrual flow. Continuous, profuse hemorrhage is rare at the outset of ectopic gestation. This may

be of value in the differentiation from a uterine abortion or retarded menstruation. A "sickening feeling" or a feeling of faintness is often present at the onset of hemorrhage in extra uterine pregnancy. The hemorrhage is usually slight at the onset and intermittent. *This fact, even though the hemorrhage occurs at the time when menstruation is due, should arouse suspicion in a woman, who usually flows profusely at the onset of menstruation.* Instead of the clots which may have previously been present at the onset of the menstrual flow, there is merely a bright spot upon the pad. This may occur once or repeatedly with hours or days interval. Observation of amount, color, and consistency of the hemorrhage are of value only when accurately noted by the patient in so far as they follow or deviate from the patient's own particular law. In this series external hemorrhage occurred in five cases before rupture. It was described as a slight intermittent spotting in four, as profuse in one. Pain precedes hemorrhage and may be relieved by it. Early in the disease external hemorrhage is not so constant a danger signal as is pain. It is present in less than one-half the cases prior to rupture. In this series the intermittent character, the slight amount and the bright color have proved significant.

During pelvic examination of a patient suspected of having an unruptured ectopic gestation, the greatest care should be exercised. The writer recalls a case in which rough manipulation caused the patient to go into a state of collapse from hemorrhage. Delay in securing permission to operate resulted fatally. The signs of an unruptured gravid tube are those of hydrosalpinx. Absence of a history of symptoms pointing to previous pelvic inflammation may be a point

in favor of the gravid tube. Its presence does not exclude it, however.

These cases fall into two groups. First, those cases of ectopic pregnancy which occur in women with an otherwise normal pelvis. Second, those cases which occur in women who have additional pathologic lesions in the pelvis. In the first group, we have to consider pain, menstrual disturbance and hemorrhage which are the result of pregnancy per se. In the second group, we have to consider the symptoms which arise from the previously existing or co-existing pelvic lesion. The early symptoms of ectopic pregnancy will be masked in that group which having suffered from pain, dysmenorrhea and metrorrhagia know no freedom from these symptoms which result from preexisting pelvic lesions. The early diagnosis of extra uterine pregnancy engrafted upon a pelvic lesion which gives rise to symptoms is rarely possible. The early history is usually identical. In the case of pelvic abscess or an acute exacerbation in a chronically thickened tube, tenderness is more pronounced upon vaginal examination. There is usually a rise in temperature. In the absence of fever, marked tenderness and a history of previous pelvic inflammation differentiation between pyosalpinx and unruptured gravid tube is rarely possible. The writer recently saw in consultation with Dr. Arthur Holzmänn, a lady who was thought to have an unruptured ectopic pregnancy. The history was suggestive in that she had not menstruated in six weeks and denied previous attacks of pain. There was no sign of uterine hemorrhage. When the writer saw her with the doctor, there was no fever and she seemed to be suffering from severe, continuous, low right-sided abdominal pain. Examination showed an exquisitely tender, dis-

tended tube. The character of the pain and marked tenderness prevented me from concurring in Dr. Holzmänn's diagnosis. Pain appeared to be too severe and continuous for an unruptured ectopic. Lack of signs of internal hemorrhage would not permit a diagnosis of ruptured ectopic to be made. This patient was admitted to the German Hospital for observation and placed in the elevated head and trunk position and the following morning posterior colotomy performed. Several ounces of pus were liberated from the cul-de-sac. She has remained free from pain and has since refused radical operation.

Case 1. Mrs. E. S., age 37, patient of Dr. Arthur Holzmänn, admitted Aug. 17, 1910. Aug. 5, moderately severe intermittent pain in the right iliac region which radiated to the vulva. Aug. 13, radiated to sacral region, became more severe and continuous. She noticed slight genital hemorrhage-spotting only. History of previous leucorrhea. Had borne one child.

Case 2. Mrs. S. H., age 30, patient of Dr. Robert F. Ludwig, admitted Aug 30, 1909. For twelve hours severe continuous pain in right iliac region simulating labor pains. 16 days in hospital.

Case 3. Mrs. C. R., age 24, patient of Dr. Westhoff, admitted Aug. 16, 1909. For two weeks patient had complained of sharp pain on the right side of the abdomen which radiated to the umbilicus. She experienced feverish and chilly sensations and vomiting. One normal labor 3 years previously. Last menstruation seven weeks before admission. Incision into a mass situated to the right and behind a boggy enlarged uterus made the diagnosis.

Case 4. Mrs. C. C., patient of Dr. Vir-done. This patient complained of right sided abdominal pain, later located in the suprapubic region, duration 2 months. It then became severe, radiated to the vulva and was accompanied by a bloody vaginal discharge. Six normal labors. 20 days in the hospital.

Case 5. Mrs. R. S., age 33, patient of Dr. Geo. Richers, admitted May 9, 1910. Twelve hours previously while in the act

of vomiting, she experienced sudden, sharp, right-sided, abdominal pain. It became severe and spread over the abdomen. She became weak and dizzy, thirsty and dyspneic. She lost consciousness and perspired at times and vision became blurred. She has had three miscarriages at 3 months. Last menstruation 7 weeks previous. She was discharged from the hospital in 13 days.

Case 6. Mrs. G. D., age 24, patient of Dr. Giovenco, admitted July 19, 1910, temperature 103.2. Twenty-two days previously patient had a profuse bloody vaginal discharge lasting four days. Pain accompanied hemorrhage, became progressively worse, of a dragging character and radiated to the thighs. She vomited and experienced painful urination. Menstruation regular until 2 years ago. Patient has borne one child and had an operation for "womb trouble." Three months previously curettage performed.

Case 7. Mrs. A. C., age 28, patient of Dr. Franciscus. For five days prior to admission patient complained of diffuse abdominal pain. It then shifted to the left side. The bowels had moved but once in 4 days and she vomited. Last menstruation occurred at the regular time. It was followed however, by slight intermittent hemorrhage, one large clot (unusual for her) was observed. Before operation ectopic had not been suspected and was revealed when a posterior colotomy into a bulging cul-de-sac liberated blood clots. Discharged in 26 days.

Case 8. Miss G. P., age 23, patient of Dr. Loewe, admitted Feb. 19, 1910. The day before she had a "fainting spell" with continuous sharp pain for 6 hours. Second attack of pain the next morning after passing a good night, when she complained of more severe pain. She vomited and again fainted. The menstrual history was "faked" in this case. This together with fact that she was unmarried led us astray.

Case 9. Mrs. M. M., age 26, patient of Dr. John Horni, admitted Sept. 22, 1910. Temperature 101. Patient had complained of severe pain in the right iliac region for 4 days. She vomited, had headache and suffered malaise. Considered appendicitis. Patient discharged in 9 days. Healing by primary union.

SYMPUS DIPUS—REPORT OF A CASE.

BY

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Congenital errors of development have engaged the attention of medical observers since the days of Aristotle (360 B. C.) to whom we are indebted for the earliest discussion of this interesting subject.

"Sympus, symmelus, or siren, as such malformations are variously termed, is distinguished by more or less complete fusion of the lower extremities. The lower end of the trunk is also defective, as evidenced by the malformations of the pelvis and of the external genital organs and excretory passages which are commonly imperfect. The united limbs usually have undergone rotation outward and backward, so that the primary external surfaces become fused. In consequence of such union the lower half of the body forms a conical mass, which may terminate below in a rudimentary single foot (sympus monopus), or two imperfect feet may be present (sympus dipus). At other times only one or more stunted toes are seen, or all traces of feet are wanting (sympus apus), the fused extremities ending in a rounded, somewhat elongated apex." (Piersol).

While hundreds of different varieties of congenital developmental errors of conformation have been recognized and described, the anomaly known as sympus dipus must be exceedingly rare, as careful search of available medical literature reveals the records of but a limited number of such examples. So far as the writer can ascertain, the personally observed case to be included herein is the only one of the kind recorded in Kentucky during the last fifty or one hundred years. Many of the modern medical and surgical text-books do not even mention the occurrence of such an anomaly, although the subject is elaborately presented in some of the works on pathological

anatomy, embryology, teratology, etc. We are indebted to Geoffroy Saint-Hilaire (1835) for the first scientific attempt at grouping and classification of the various teratisms, and the subject was further illuminated by Hirst and Piersol in their work on Human Monstrosities, published in 1892.

More than two thousand years elapsed, after the classic description of Aristotle, before anything was definitely known concerning the probable etiology of congenital errors of anatomic development. "Previous explanations of the production of monstrosities consisted of confused and fanciful assumptions, often grotesque in their absurdity, in which supernatural influences, the benign or baneful exercise of divine power, the impressions wrought by heavenly bodies, the blighting influences cast by unholy spirits and by witches, sexual congress with the lower animals or with Satan himself—'*coitus cum diabolo*' being accepted as an important factor even as late as Martin Luther (1500) and Ambroise Paré (1560)—all found accredited place in the category of potent causes of monstrous births." (Piersol).

While the diffusion of modern embryological and teratological knowledge has lessened the mystery which formerly surrounded the etiology of congenital anomalies, many of the ancient superstitions still obtain. At one time the birth of a monster (human or otherwise) was an "omen"—i. e., "a prophetic manifestation of the impending wrath of providence," which markedly enhanced theologic and historic interest in such occurrences. "And the hankering after the mysterious and inexplicable which has always formed so pre-eminent a characteristic of man, has successfully popularized the most preposterous explana-

tions of the genesis of prodigies of every type and class." The variety of monsters described and illustrated by Aldrovandus and Paré show the riotous intellectual ingenuity of medieval superstition.

Malformations of every description were at one time almost unanimously attributed to the effect upon embryonic tissues of grave maternal impressions, usually exposure of the pregnant woman to some shocking sight or accident. It is believed that modern anamnestic methods would reveal that in every case the so-called "impression" occurred at a period too late in gestation to produce any possible alteration in fetal structure. To have any effect whatsoever, such a cause would necessarily have to be operative during the early weeks of pregnancy, i. e., before embryological changes ensued, which would result in development of a normal fetus. Landau emphatically remarks that "maternal impression is and remains a superstition, and despite Welsenburg's highly instructive work on the subject, it has not become worthy of scientific recognition."

Lewis attributes all teratological developments to physical and mechanical causes entirely remote from psychical influences, and his view is supported by the artificial production of monstrosities in laboratory investigations. For example, by agitating the eggs of hens, serpents, etc., at different periods of incubation, various forms of teratism resulted, and these forms were invariably reproduced in different experiments when the eggs were disturbed on corresponding days. The later in the period of incubation the eggs were agitated the milder the degree of teratism, and *vice versa*; in other words, all grades of malformation appear to be merely arrests of development, and the earlier this arrest oc-

curs the graver the form of monstrosity. Thus cyclops must be produced by developmental arrest in the earliest days or weeks of embryonic existence, before differentiation of the optic tracts has occurred, whereas the various fissions, exomphalos, harelip, cleft palate, etc., are of later development. Profound shock during the first days of gestation, poverty and want producing fatal anemia, consanguinity, incestuous connections, etc., are some of the etiological factors suggested in the human being. Barnes, of England, especially emphasizes the importance of marriage of near relatives as a causative factor in the production of monstrosities, and this fact is apparently confirmed in the personally observed case to be reported.

The studies of Mall on the etiology of human monsters, and the extensive researches in experimental teratology with artificial production of cyclopean monsters by Stockard and Lewis, are of engaging interest. Stockard found by treating eggs of the common minnow (*fundulus*) with solutions of magnesium chloride immediately after fertilization, a large percentage of cyclopean monsters could be produced. Lewis produced almost identical defects by destroying, in later developmental stages, the extreme anterior end of the medullary plate before it invaginated to form the central nervous system.

In a critical examination of an extensive series of double monsters, Janus types, cyclops types, and related forms, Wilder brings under one law the entire series of symmetrical monsters, both "monsters of defect" and "monsters of excess." He claims that all bilaterally symmetrical vertebrate bodies, of both usual and unusual forms, develop in accordance with orderly laws of their own and are

termed "cosmobia," i. e., orderly living beings, as distinguished from deformities or lawless aberrations of development. Cosmobia may be normal beings, or abnormal, or unusual. Some of the abnormal cosmobia are less than typical individuals ("*monstra in defectu*"); some of them more than single individuals ("*monstra in excessu*").

According to the majority of authors the determining etiological factors concerned in the production of congenital anomalous development may be divided into two general groups, viz., (1) internal or intrinsic, and (2) external or extrinsic. Internal causes may be held responsible for spontaneous malformations where extrinsic influences can be excluded, for instance the defective constitution of the germ-plasm whether modified by inherent peculiarities of one or both parent-cells, by pathological changes affecting the embryonic organism, or by impressions due to heredity or atavism. The proposition of defective parental germ-cells, however, merely represents a theoretical assumption, since demonstration of the structural variations producing deleterious effects upon the embryo is manifestly impossible. The apparent influence of heredity with reference to particular defects has long been recognized, supernumerary fingers and toes, harelip, skin pigmentations, etc., occurring in certain families through successive generations; and graver abnormalities, including hypospadias, imperforate anus, spina bifida, microcephalus, and partial absence of limbs, also seem influenced by transmitted predisposition.¹

External operative causes may be me-

chanical, such as traumatism and pressure, or physico-chemical, such as variations of temperature, electricity, deficient oxygen, toxics, and maternal influences. External violence may induce arrest of development by causing impaired nutrition from separation of the ovum and maternal tissues due to extravasation of blood. Even slight pressure long continued exerted at an early period may produce profound fetal changes. The intimate relationship between the amniotic envelope and the embryo (especially the cephalic end) renders abnormal diminution of the amniotic space serious in the early stages of embryonal development, and may induce defective conformation of various cerebral segments, the eyes (cyclopia), or parts normally formed by the visceral arches. Certain types of deformities of the skull (cranioschisis) and of the spine (rachischisis) are probably due to amniotic pressure. Likewise development and differentiation of the caudal extremity of the embryo may suffer, the immature lower limbs remaining stunted (phocomelus) or unformed, or be early so blended that their future development gives rise to a compositive member (symelus or sympus). Amniotic adhesions must also be considered, the constriction due to an encircling band of amniotic tissue sometimes being responsible for amputation of a portion of one or more limbs.

While the effects of physico-chemical influences upon development of the ova in lower types (birds, amphibians, fishes) furnish extremely interesting experimental data for scientific consideration, our knowledge relating to these influences upon the

¹ In the light of present embryological understanding, it seems the height of absurdity to attribute anatomic developmental errors to either maternal impressions or the influence of heredity. The hypothesis of hereditary in-

fluence in the production of anatomic defects has hitherto been vastly overworked. In the majority of instances anomalous development can certainly be explained upon a more reasonable and understandable basis.

human embryo must necessarily remain purely conjectural.

Despite the absurdity of the hypothesis relating to the presumed influence of maternal impressions in the production of anatomic defects of conformation, the extent to which this ancient superstition prevails even among the otherwise well-informed is offered as an excuse for further consideration of the subject. Practically all the older and many of the more modern medical text-books give maternal impressions as a most potent cause of fetal malformations, thousands of such examples have been recorded in the literature, and one author exhibited the temerity to compile an elaborate monograph including several hundred authentic (?) cases illustrating the deleterious effects upon the fetus of pre-natal influences! Notwithstanding the seemingly convincing testimony adduced in substantiation of such erroneous premises, it appears pertinent to remark that present embryological understanding is irreconcilably opposed thereto. "Were the instances recorded in which no defective development follows the exposure of the mother to impressions to which malformations are attributed, the overwhelming majority of negative results would do much to lessen the effect now made on the popular mind by the carefully reported cases in which the real or imaginary coincidences are cited as positive proofs of the sufficiency of maternal impressions as a cause of deviations in embryogenesis." (Piersol). "Conceding that certain defects may result from nutritive changes arising in consequence of profound nervous impressions on the mother, nevertheless to those familiar with the embryological significance of malformations, the basis of the popular belief in the potency of maternal impressions will

appear as depending upon the very natural desire to find an explanation for unintelligible misfortunes in coincidental circumstances rather than upon well-established and accurately observed phenomena." (Piersol).

Shelly maintains that the maternal impression theory is both logically and biologically untenable, and believes the profession should try to overcome this popular superstition, not only because modern science demands it, but especially because innocent, sensitive mothers should be spared the crushing responsibilities which belief in this cruel notion so wrongfully inflicts upon them.¹

There appears to have been hitherto no clear distinction between pathogenic and teratogenic phenomena, the tendency having been to attribute all anomalies and monstrosities to pathologic alteration. This view is opposed by Rabaud who maintains that normal histogenesis and integrity of tissues is essentially characteristic of anomalies and monstrosities. In contradistinction to morbid phenomena, which are characterized by partial or total destruction of protoplasmic elements, the formation of inert substances and the checking of vital changes, pathogenesis involves histogenetic abnormality together with cytolysis or other disturbances of histologic integrity; whereas teratogenesis may be regarded as involving infectious or toxic agents which provoke

¹ Bardeen considers faulty implantation of the ovum the most frequent cause of abnormal development, and refers to experimental data illustrating the readiness with which monsters may be produced through mechanical or chemical means in lower forms of life. The results of tubal pregnancy show that pathologic embryos or monsters may sometimes be produced by the effect of unfavorable environment upon the human ovum. He agrees there is no evidence that maternal impressions have anything whatsoever to do with the production of monsters.

abnormal cell differentiation and variations in the rapidity of growth without change in the fundamental qualities of cells or tissues. The factor which primarily determines teratogenic change may secondarily induce pathogenesis, or the two processes may act in concert, teratogenic alteration being at first visible, but finally masked by pathogenic changes. Clear distinction should be made that teratogenesis has to do with viable and sound tissues capable of evolution, while pathogenesis incites tissue change and prepares the way to its destruction.

According to Warthin, intrinsic pathological conditions of the newborn are those arising in the germ independent of external influence. They may be inherited, existing in either one or both of the sexual nuclei, or may occur as a primary germ variation, and the inheritance may be either direct, collateral, or atavistic. "In explanation of such variation we are at present limited to the hypothesis that either one or both of the sexual nuclei which combine to form the new individual are abnormal, or that from the union of two normal nuclei a pathological variety may arise, or finally that the pathological variety may be the result of disturbances in the process of copulation!"

Extrinsic injurious influences probably play the chief rôles in the production of monsters and malformations. Among the most important of these may be mentioned maternal trauma, jarring and contraction of the uterus, pressure from uterine or pelvic neoplasms, dislodgment of the ovum, partial placental separation and hemorrhage, uterine or placental disease, maternal diseases, disturbance of oxygenation and nutrition, intoxications, infections, etc. Amniotic abnormalities are also likely to cause

fetal malformations, such as abnormal tightness of the amnion, particularly of the cephalic or caudal end, adhesions between amnion and fetus, etc. Oligohydramnios and polyhydramnios may occasion a variety of malformations.

It is the contention of certain authors that the primary cause of fetal anomalies must be in the ovum itself, and for a reasonable explanation we must seek further into the history of both parents. While they may not be neurotic, investigation will nearly always reveal the presence of disease or abnormality originating in the nervous system "and indicating an unstable organism whose germ cells naturally partake of the instability—an inexact term, by the way, which we are compelled to use in our present ignorance of the chemic constitution of the substances of cell protoplasm. The wonder is not that such an ovum is injured, but that so many escape intra-uterine damage or even reach maturity."¹

On the morning of March 14th, 1915, I was called to see Mrs. A., aged thirty-two years, who stated that according to her estimate labor was then three months overdue; in other words, she dated the beginning of pregnancy twelve months previously. She is the mother of five children, all of whom are living and healthy, this being her sixth pregnancy. All her previous labors had been uncomplicated, and as she had always enjoyed normal health, there was nothing of interest in her personal history.

Family history: mother living at the age of sixty-nine; two sisters died of "summer complaint" during infancy; two brothers and one sister living and healthy; father living and in good health at the age of seventy years.

¹The theory that defective ova and spermatozoa are primarily responsible for anomalous anatomic development, including monstrosities, etc., is certainly contrary to present embryological understanding. The fact seems fairly well established that diseased or otherwise abnormal ova and spermatozoa are incapable of being fructified.

Mrs. A.'s husband, who is her first cousin, is thirty-nine years of age, and has always been healthy. Both his parents are dead, but he said they had been normal. He has two brothers living, one in good health; the other, aged thirty-seven, has suffered from "weak spine" all his life and has never been able to work; while he can walk about with a fair degree of comfort "he cannot stoop down and straighten up again" without assistance; he is said to be mentally stupid, but not an idiot; one sister living and in good health.

Examination of the patient showed that she had arrived at about the end of normal utero-gestation, her estimate as to the duration of pregnancy (twelve months) prob-

and death had occurred probably but a few days previously. The fetus is smaller than the average full term baby, weighing about five pounds. The umbilical cord was abnormally long and encircled the neck of the child twice.

The accompanying photograph (1) shows the characteristic symelic deformity (*sym-pus dipus*). Nothing unusual is noted about the external appearance of the upper portion of the body, excepting that the head is slightly larger and the arms much longer than in a normal fetus born at term. The lower extremity consists of a single leg with an apparently double web-like foot at-



FIG. 1. Coleman: Sym-pus Dipus.

ably being a mistake. As there was no indication that my services would be required for several hours, the husband was instructed to call me later, that is whenever the signs of beginning labor became apparent. I was hastily summoned about ten o'clock the same night. The child was born shortly before I entered the room. The patient stated that following slight preliminary discomfort there had been one severe labor pain, and the fetus was expelled almost immediately. The placenta was extruded within a few minutes and presented nothing abnormal, nor was anything unusual noted about the amniotic structure. No fetal movements had been observed by the woman during this pregnancy; and while the child (a symelic monster) was dead when extruded, there was only slight maceration of the surface of the abdomen

tached. The fleshy pediculated protuberance growing from the thigh may be the remnant of a displaced second leg. There is no evidence of the existence of either anal orifice or external genital organs. As the fetus has not been examined anatomically, whether visceral malformations exist is unknown.¹ The anomalous osseous de-

¹This case was briefly reported and the fetus exhibited before the Society of Physicians and Surgeons, of Louisville, Kentucky, March 18th, 1915, or four days after the delivery. The fetus was removed from the preserving fluid to be photographed nearly three weeks later, which explains the wrinkled and shrunken external appearance as noted in the picture. As stated in the text there was but slight maceration at the time of birth, and it is regretted that a photograph was not secured then.



FIG. 2. Coleman: Sympus Dipus.

Note in radiogram the macerated and overlapping cranial bones. The only remnants of right leg are head of femur and web-like mass on inner side of thigh showing slight resemblance to foot; two very small bones are seen in this mass. Note absence of fibula with various irregularly placed tarsal and metatarsal bones. The light shadow extending upward from umbilicus is the funis which encircled the neck twice. D. Y. Keith.

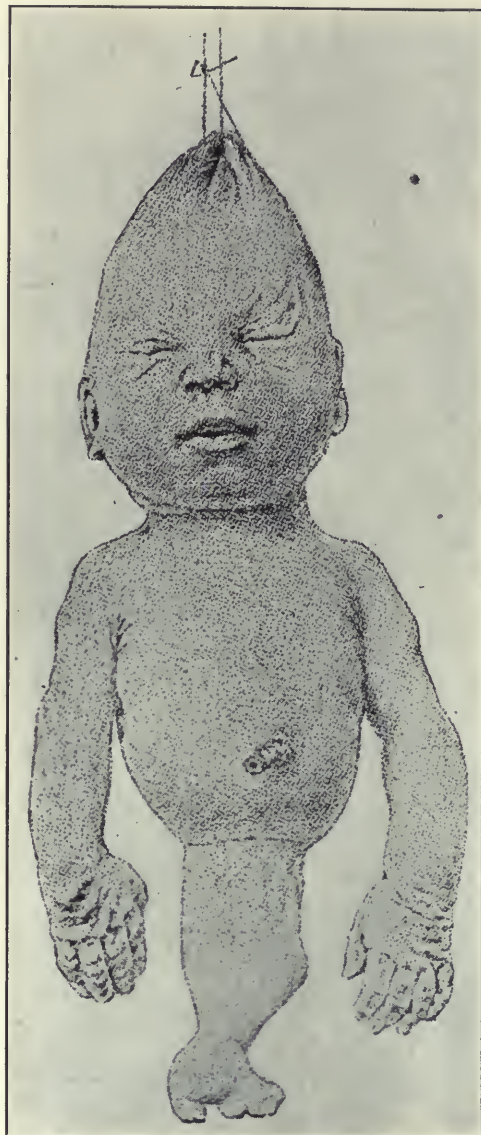


FIG. 3. Symphysiotomy (Taylor).



FIG. 4. Symphysiotomy (Taylor).

velopment is splendidly illustrated by the excellent radiogram (2) made by Dr. D. Y. Keith, and his description of the findings will be found attached thereto.

Taylor records a similar case (3 and 4) in which delivery was also uncomplicated. Placenta normal; cord small and pulsating; nothing abnormal about amniotic fluid. The

child weighed two pounds and survived forty minutes. The head, thorax and upper extremity presented nothing abnormal. The right wrist was ankylosed, semi-flexed, the thumb being represented by a supernumerary finger. There was no osseous formation about the pelvis. The lower extremity joined the trunk slightly to left of mid-line.

flattened transversely and reversed anteroposteriorly. Knee joint flexed in forward position and slightly ankylosed. Tibia and fibula larger than usual and markedly flattened. There was apparently no articulation at the ankle, and the integument below presented the same appearance anteriorly as

slightly elevated protuberance one and a half inches above the upper extremity of the femur. The parents were healthy and not related by consanguinity.

In an illustrated paper McDiarmid describes what he calls "the remarkable malformation known as symelus, belonging to



FIG. 5. Symelus Dipus (Singer).

did the plantar surface of foot. The toes were represented by three rudimentary protuberances without nails. Complete absence of external formation whereby the sex might be determined. The anus was imperforate, and the spine terminated in a

the rare variety designated as siren formations." There was complete fusion of the lower extremities, also obliteration of the anus and genito-urinary system. He mentions that while trauma has been assigned as a possible cause of this malformation,

and the existence of amniotic bands and adhesions has also been suggested, the more probable cause is "a primary defect in the germinal area of the ovum!"

In Singer's case (5 and 6) the child was one of twins, the first born being a normally formed child. It was a breech presentation and the cord was clear, i. e., it did not encircle the neck or body. The child weighed three pounds, lived two hours, cried lustily,

could not be determined. Neither feces nor urine was passed. The parents were healthy, and five previous children, the first two being twins, presented no abnormalities.

Jewett refers to a fetal monstrosity in which there was absence of one lower extremity, and of the other, only the thigh and tibia were present. There were no genital organs, but dissection was not made to determine the extent of pelvic development.



FIG. 6. Sympus Dipus (Singer).

and could move its arms and head. There was only one bone (femur) in upper part of leg, but two fused bones in the lower portion, and the feet were distinct. Practically all the pelvis was recognizable, and "the rudiment of Saint-Hilaire's appendage" resembling a tail immediately above the anal region was present. As regards the external genital organs, there was an opening, but whether it was anal or vaginal

There was a "club-hand" upon either side.

In the case recorded by Cotton the most marked defect was shortness of the extremities; at first glance the thighs and arms seemed to be wanting. A radiogram revealed but one bone in each extremity—probably humeri and femora. The hands and feet were distally "clubbed" and partially webbed. The cortical substance of the brain was attenuated, and wide separa-

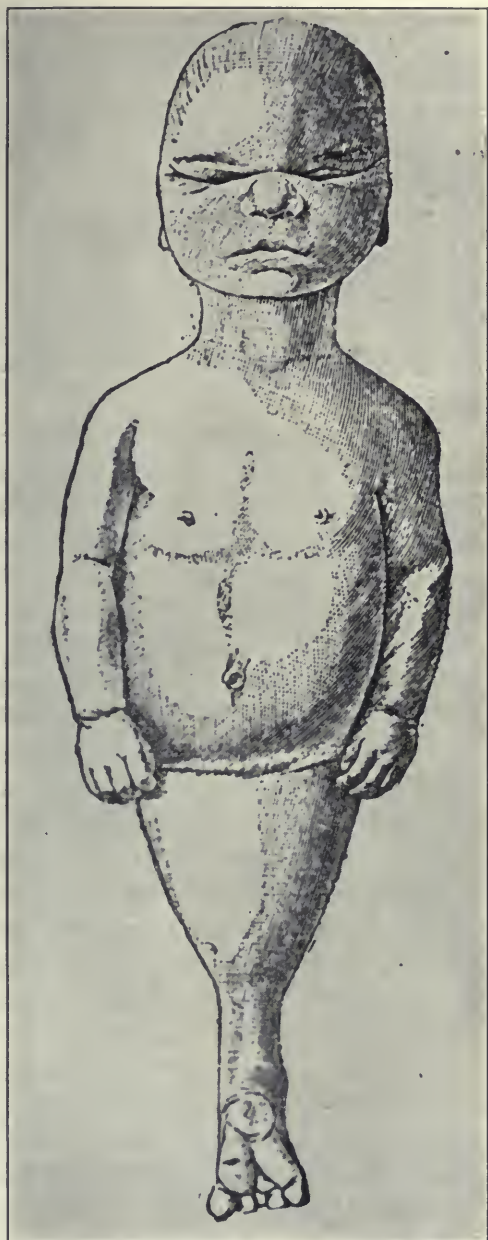


FIG. 7. Symptus Dipus (Zeigler).

From *Ref. Hand Book of the Med. Sciences* (Piersol), Vol. VII.

tion of the parietals added to the suggestion of previous hydrocephalus. At the umbilicus was an omphalocele with the funis at its upper border.

Stouffs speaks of a monster with double

harelip and imperfect development of both upper and lower extremities. The hands, consisting of three fingers, were joined to the clavicles and scapulæ by single bones. The long bones of the legs were absent, a single center of ossification representing the tarsus, the feet were perfect excepting for a webbing of the fourth and fifth toes. The four extremities resembled those of a seal.

It is recognized that the two latter cases cannot be correctly classified in the symelic type of congenital malformations, but they are included in this report as representing rare examples of defective development.

According to Dorland during the fifteen years (since 1900) seven examples of symptus dipus have been reported in the literature of the world, and the personal observation herein recorded makes a total of eight. The other examples differ in no essential respect from those excerpted in the foregoing.

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A POSITIVE METHOD OF PREVENTING AND CURING PURULENT INFECTION—AN APPEAL TO THE ARMY SURGEON.

BY

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The desire still further to disseminate a knowledge of the following simple method of wound treatment, which is now successfully employed by some of the surgeons of the warring nations of Europe, has impelled the preparation of this article upon autotherapy. It is especially and particularly adapted to the treatment of wounds of warfare, not only because of the convenience and simplicity of technic, but also because of its great therapeutic value. It appeals strongly to reason from the fact that the wounded most frequently may so treat themselves as to abort infection before the surgeon arrives. The great thing to be feared in all wounds of warfare is the "yellow peril," pus infection. Pathogenic microorganisms find lodgment in practically every wound. Autotherapy presupposes the wound is infected and employs the invading microorganisms to immunize the tissues against invasion. If active infection has begun before the patient is seen by the surgeon, autotherapy will cure in the shortest possible time, regardless of when treatment is begun. Wherever the wounded soldier may be, there in his wound is the remedy at hand ready for use. The reaction to the unmodified toxins contained in the live microorganisms found in the wounds is the specific curative reaction to the same toxins remaining in the body.

This method of treatment is applicable to all infections and surpasses in thera-

peutic value anything that modern medicine or surgery has hitherto offered for the conditions. By many it is claimed to be the method of wound treatment, and the only one that will cure many of the most severe and profound septic states.

It is not an experiment, for it has been employed successfully for the past five years in daily practice and received the unqualified endorsement of leading medical and veterinary societies of the United States.

For convenient autotherapeutic reference, all non-fatal wounds of warfare are divided into two classes: (1) Emergency or those requiring immediate surgical attention, such as depressed fracture of the skull, injury to the viscera, rupture of large vessels, etc. (2) Those not requiring immediate surgical attention as far as danger to life is concerned. There are two subdivisions of this second class of wounds, namely, (a) those which it is necessary for the surgeon to treat in aborting and curing infection, such as wounds of the mouth, esophagus, abdominal or pleural cavity, etc., and (b) those which the wounded soldier may abort or cure himself, such as laceration of muscles, injury to bones; in fact, all wounds not included in class (a). Clearly, it is this class of wounds that is received in the vast majority of instances and in which infection may most always be aborted by the wounded soldier himself as soon as the wound is received; that is, before the surgeon sees him. It is during this interval that the advantage of autotherapy is signally manifest, for the soldier himself has it within his power to prevent or abort infection.

¹The soldier should be instructed to lick

¹Abundant clinical tests prove that tetanus may be aborted and cured in the same way.

or suck his wounds as soon as they are inflicted, and then every two to four hours afterwards for several days. If this is done, there will be no more deaths from infection, for the wounds apparently heal by first intention. If from anatomical reasons the wound is inaccessible to sucking or licking, infection can be prevented by simply chewing for five minutes, twice daily, the blood-stained cloth covering the wound, swallowing the fluid. This self treatment should be continued for several days until the danger of infection has passed. Preferably, the gauze should be sterile, but many clinical tests clearly show that non-sterile gauze is better than no gauze. (See *The Practitioner*, April, 1914).

A convenient hospital method of preventing infection in fresh wounds is to place the stained part of the gauze in a four ounce bottle of sterile water, shake well, allow to stand for half an hour, and then administer the decanted fluid to the patient. This should be done twice daily until the danger of infection has passed. This treatment is absolutely dependable and has been verified daily for many years. For this reason it is commended to the army surgeon with the assurance that the resultant loss of life among the wounded will be reduced to a minimum.

Autoimmunization in Purulent Infection.—Autoimmunization of the patient against all infecting microorganisms after pus has appeared is just as simple as the method of prevention. The results in curing infection are so prompt as to often render the treatment highly spectacular. If the wound is suppurating when the patient is presented for treatment, he is given two drops of the pus every hour until three doses have been administered, when the treatment is stopped. A convenient way of

doing this is to place two drops of thick creamy pus and two drops of the thin serous exudate together with two drops from a slight curettage from the side of the wound in an ounce of water, shake well and give one-third by mouth at hourly intervals. In many cases this is all that is necessary to cure the most stubborn, chronic refractory cases. The more virulent the infecting microorganism, the more rapid will be the response and cure. The discharge in these chronic infections will often cease within twenty-four hours. At first the discharge becomes thin and bloody. No more should be given as long as this condition persists, for this is an indication that the curative reaction is continuing. If the pus again becomes thick, repeat the process. The foregoing method of treatment is applicable to all wounds not directly or indirectly connected with the alimentary tract or respiratory system.

Wounds of the mouth, nose, esophagus, lungs, etc., or wounds in any way connected with the alimentary tract or respiratory system should be treated by the following technic:—Place ten drops of pus in an ounce of water, shake well and allow to stand for twenty-four hours at room temperature. Filter through a Chamberlain-Pasteur, or Berkefeld filter and inject subcutaneously twenty minims of the immunizing bacteria-free filtrate. Repeat the injection only if the discharge should again become thick. At times, this occurs at the end of the fourth or fifth day. Coincident with thinning of the discharge, the clinical symptoms subside. Pain usually ceases within twenty-four hours, very often much sooner. Frequently, but one injection is all that is needed to cure. It will practically never fail unless the patient suffers from shock or the tis-

sues are debilitated by the toxins of diabetes, chronic rheumatism, nephritis, etc. The average soldier, however, usually is young and vigorous, in which class of patients the treatment is most dependable. If another dose is required it should be made

which should be used autotherapeutically (that is, chewed), or by other methods suggested. Apply nothing to the wound but boiled water and sterile gauze if it is convenient. Treat the wound by well-known surgical procedures, as removal of foreign

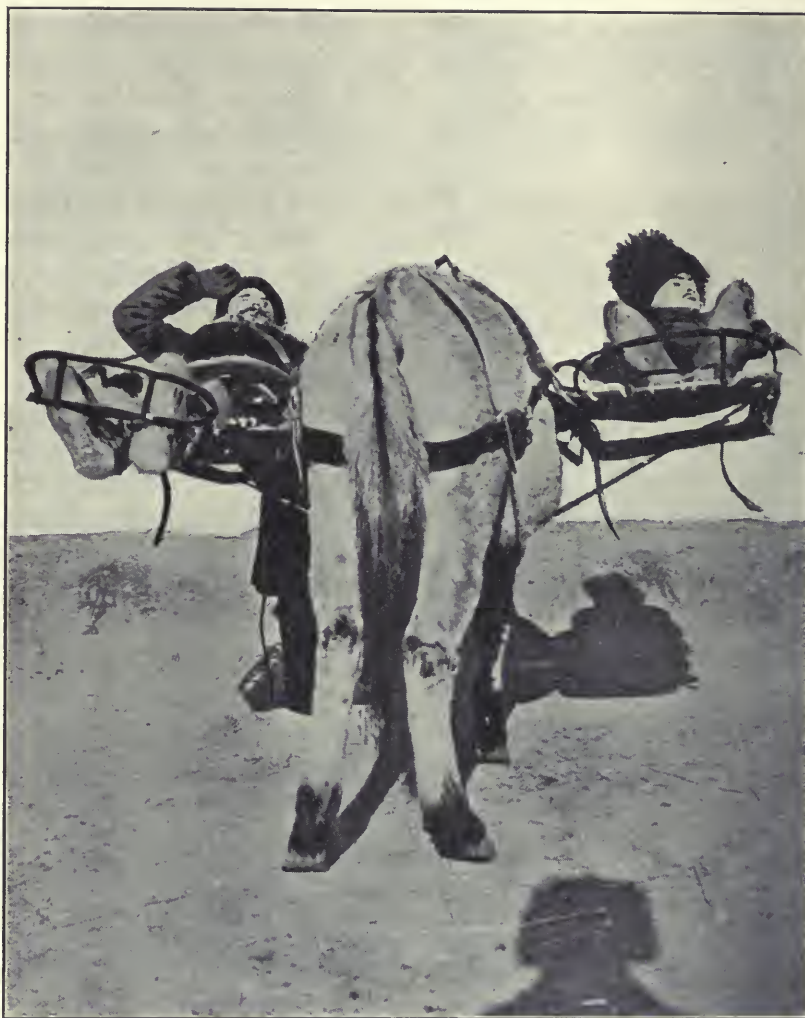


FIG. 1. One Russian method of transporting wounded from the front.

from the fresh pus taken from the wound, for other infectious microorganisms may have entered since it was inflicted, as during the dressings. When the wound is small it should be kept open by a drain,

bodies. While every soldier carries a package of sterile gauze, this is not enough. He should be instructed how to use the gauze in the manner suggested. This will result in great saving of human life.

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THE AMBULANCE SERVICES OF THE WARRING NATIONS.

The Germans were so thoroughly prepared for war that their ambulance service was adequately equipped and worked smoothly from the first. The French were not so well prepared, but at the present time their ambulance service is excellent. The British had a splendidly equipped service for an army of 250,000 but had, of course, to increase both equipment and per-



FIG. 2. The Queen Alexandra Contingent worked by the Salvation Army to assist the British Army in France.

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sonnel to meet the demands of a greatly enlarged force. It is now working well. The development of automobiles has played a great part in the evolution of efficient modern ambulance service and the French, British and German armies are all adequately provided with motor ambulances. Russia was not properly prepared for war and

especially was her transport system defective. Neither in railway, nor in motor car facilities, was she equipped as were the other belligerent nations. Consequently, on account of having to depend largely upon primitive modes of conveying her wounded, Russia has suffered more severely by far than any of the other countries engaged in

balances used by the British (Fig. 2), and while their use goes to show how greatly the Russians are handicapped in the conduct of their campaign, yet without these patient, strong, little animals, the transportation of the wounded from the scene of action would present a still greater problem.

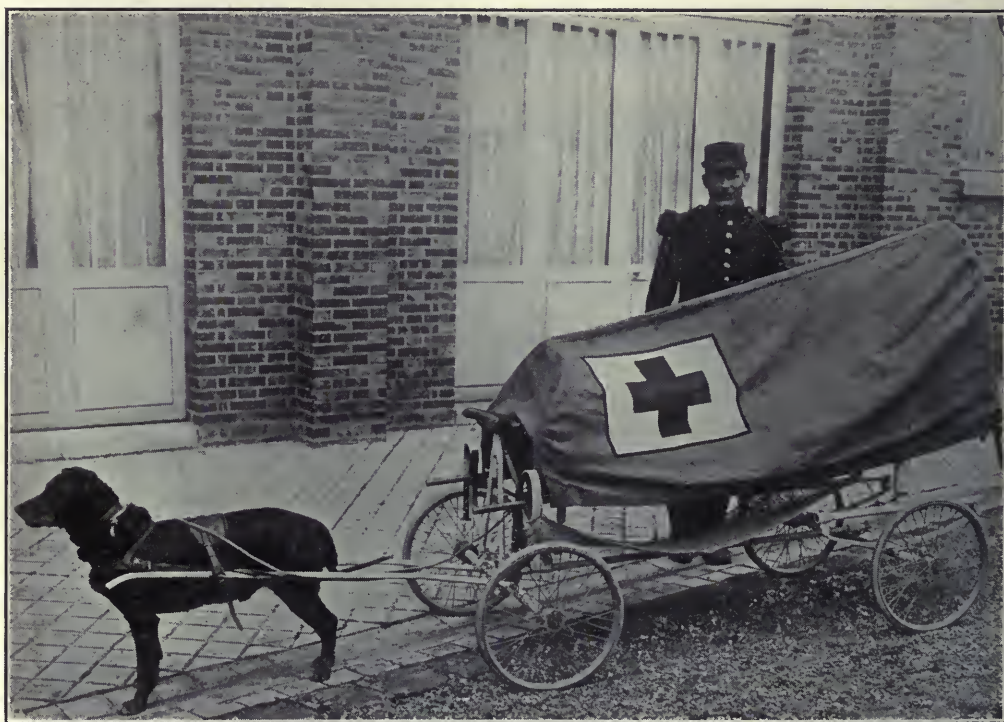


FIG. 3. French Red Cross with dog cart.

the war. For the transport of the wounded from the battlefields the Russian Medical Army Corps have made use of the small shaggy but hardy and wiry Siberian ponies. One of these ponies by an ingenious manner of placing the wounded is able to carry two individuals in a fairly comfortable position. (Fig. 1.) These ponies are slow but sure, and probably do not shake the injured men to any great extent. Although, they cannot compare with the motor am-

The French and Belgians are using dog carts in their Red Cross work.

These illustrations show only a few of the various ways used early in the war to get the severely wounded back as quickly as possible to the first dressing station with minimum discomfort and hurt. As the war has gone on, the ambulance service has shown great improvement in kind and quantity of equipment as well as in methods of handling.



MODERN REMEDIES

Edited by Dr. J. W. Wainwright.

Fibrolysin in Fibrositis.—In a discussion of various forms of fibrositis and its treatment in the *Medical Press and Circular*, Arthur C. Luff refers to fibrolysin as follows: This is a chemical combination of thiosinamin and sodium salicylate, for which the claim has been put forward that it has a softening effect upon all forms of pathological fibrous tissue. In a former paper he reported on the use of it in a somewhat limited number of cases of fibrositis, and then gave a somewhat guarded favorable opinion as to its being of use in properly selected cases. He here reports the results of an extended experience of the use of the drug, an experience which, he states, does not support the somewhat favorable opinion that he formerly expressed. He has obtained the results of its use in 83 cases of various forms of fibrositis, some of which were treated throughout, but in the majority of which he is indebted to careful reports furnished by the various medical men who, on his advice, carried out the treatment. They were all carefully selected as cases likely to be favorably influenced by the use of fibrolysin. In 18 out of the 83 cases the use of the drug had to be discontinued owing to the injections causing rise of temperature, malaise, nausea, headache, and in some cases palpitation, vertigo, tendency to syncope, severe general pains, and a purpuric rash. This leaves 65 cases in which a full course of 40 injections of fibrolysin, together with massage of the affected parts, was employed. No good whatever resulted in 46 of the cases; in 11 there was some improvement, which was permanent in ten and transient in one; in eight there was permanent cure. So that the numbers converted into percentages are: No benefit 71 per cent. Some improvement 17 per cent. Cured 12 per cent.

In every one of the cases of rheumatoid arthritis and other forms of infective arthritis in which, after complete arrest of the arthritis, a full course of fibrolysin was used in the endeavor to reduce or remove the fibrous thickenings around the joints, no improvement whatever resulted. Similarly in all the cases of Dupuytren's contraction of the plantar fascia that were treated no benefit resulted. The eight cases that were cured comprised four of diffused or localized fibrositis with nodules, three of fibrous thickenings and adhesions around a single shoulder joint, and one of severe thrombosis of both femoral and external iliac veins with thickening of the walls of the veins. In this last case complete absorption of the thrombi and of the thickenings of the venous walls resulted, but massage was not resorted to until after complete disappearance of the thrombi.

From these results it appears to Luff that fibrolysin has a very limited use, and that he cannot avoid the inference that the claims that have been put forward for the preparation must be considered extravagant.

Treatment of Urticaria with Epinephrin.—The *Boston Medical and Surgical Journal* calls attention to the work of Swann of New York who publishes the results of the administration of epinephrin subcutaneously in six cases of urticaria. In all of these cases this treatment was followed by a rapid disappearance of the erythema and wheals. The preparation used was the 1-1,000 adrenalin chloride solution given in a dose corresponding to eight minims for an adult of 140 pounds, this dose being repeated in 10 minutes. The eruption disappeared constantly after the

second dose; an improvement was seen eight minutes after the first dose, became most marked in from 10 to 20 minutes, the eruption then disappearing with startling rapidity. There was no itching in from five to twenty minutes after the first dose.

Recurrences in these cases were apparently uninfluenced. The writer was not present in any instance where the rash reappeared, so that he could not test the treatment again under these circumstances. Whether or not repeated doses will relieve the condition for a longer time will be an interesting subject for study.

The rapid disappearance of the wheals in these cases is interesting in connection with recent studies of epinephrin, which have shown by experiments on excised peripheral arteries that contraction occurs when they are treated with high diluted solutions of epinephrin, and that the degree of this contraction depends on the amount of contraction of the vessels when the treatment is given, the contraction from the treatment being much greater when the vessels were previously relaxed.

This remarkably speedy effect on the wheals of urticaria suggests its use in more serious conditions, notably those of angioneurotic edema, in which edema of the epiglottis and glottis may endanger life. Here it is quite conceivable that epinephrin might act in the same prompt manner as it does upon the wheals in urticaria. Anaphylaxis with bronchial spasm and edema is another case in point.

Epinephrin has been shown to be capable of relieving the asthma of anaphylaxis. It has also been suggested that epinephrin could be used as a diagnostic test to differentiate vasomotor eruptions from those of different origin, such as a serum erythema from that of scarlet fever.

Ointment in Granulating Wounds.—

G. Betton Massey in the *New York Medical Journal*, April 26, 1913, states that after many experiments with various ointments he has selected two as the most useful for small and large wounds, remaining after the destruction of malignant growths, while their occasional use in other wounds has shown their general value also. One of these, and the most important, is zinc oxide

ointment diluted with four times its weight of semifluid petroleum, etc. This is used on the wounds so freely that it alone comes into contact with the granulations. A mild antiseptic, gentle stimulating action will be shown in a few hours. No water or other irritating substances are allowed to come in contact with the wound surface, and only the surrounding skin is cleaned with soap and water or alcohol when the dressing is changed. If an abundance of the ointment is used the wound will be self-cleaning.

The other ointment which is sometimes used for a time when the diluted zinc oxide ointment appears to over redden the granulations by over stimulation, is the boric acid ointment of the pharmacopeia, but this is seldom required.

Hectine in the Treatment of Syphilis.

—Fench and Mills, (*Lancet*, June 26, 1915), report a case of intractable syphilis which was not benefited by either mercury or salvarsan. It was a tertiary form of the disease and hectine, which is chemically sodium benzosulphoparaminophenyl arsenate, was given in 0.2 gram doses daily or on alternate days. Three courses of ten such doses each were given with favorable results, including healing of the lesions with marked and rapid gain in weight. Hectine was given by subcutaneous injections without local irritation or other discomfort.

Arthigon in Gonorrheal Cardiac Disease.

—Luithlen, (*Weiner Klin. Wochenschrift*, May 20, 1915), writes that endocarditis symptoms appear in the course of gonorrhea in two forms: insidiously in gonorrheal arthritis, or abruptly with marked constitutional symptoms, such as chill, fever, etc. Prognosis in the latter form is unfavorable, though not as grave as in the septic form. The author reports a case treated with arthigon administered intravenously in doses of 0.1 to 0.2 gram with reaction following every injection as long as heart signs could be demonstrated; when these were no longer present there was no reaction from the agent. During these reactions the patient was generally worse,

symptoms of cardiac collapse appeared and objective phenomena were made temporarily worse.

Failure of Autoserum Treatment of Skin Diseases.—M. L. Ravitch is of the belief that autoserum is not an ideal or even effective agent in skin diseases. He has found it in fact ineffective in urticaria and chronic eczema, albeit it gave strikingly favorable results in a very obstinate case of psoriasis of thirty-two years' duration. Sixty per cent. of the cases of psoriasis, however, did not respond at all to autoserum, while the other forty per cent. were only temporarily benefited. Ravitch has had a favorable temporary result from lecithinized serum, plain artificial serum, and injections of cacodylate of soda and mercury. None of the serums made any impression on psoriasis without the use of chrysarobin. Urticaria and pruritis were not materially benefited by serum of any kind for the reason in all probability that some focal or metabolic disarrangement existed.

Phenol in Tetanus.—Stewart and Laing in the *British Medical Journal*, (December 26, 1914), report an interesting case of tetanus cured by injections of phenol (carbolic acid). The patient, an English officer, manifested the symptoms of tetanus seven days after receiving severe shell wounds. Despite the repeated use of large doses of tetanus antitoxin and full doses of chloral and bromides the condition grew steadily worse, when it was decided to begin treatment with phenol. Two c. c. of a 5 per cent. solution were injected hypodermically into the abdominal wall every two hours. Improvement began on the same day. The tetanic spasms diminished in frequency while the patient completely recovered one month after the first symptoms of tetanus appeared.

Histamin.—Sieburg, (*Deutsche Med. Wochenschrift*, December 3, 1914), has studied histamin extensively in animal experiments and declares it to be a severe poison. It causes uterine contractions,

bronchial spasms which may cause death, and other severe phenomena. Tested on women in labor in 6 to 8 mgm. doses it caused marked contractions of the uterus, and so many untoward symptoms, such as headache, palpitation, vomiting, rash, &c., that its use as an oxytocic is not to be seriously thought of. It may be possible, Sieburg thinks, to combine it with correctives by synthesis or otherwise. Histamin which is chemically B-amidoazomethylamin, is a natural constituent of ergot and some of the oxytocic action of ergot is evidently due to histamin. Substances closely related, if not identical are known to appear at times in the body and seem to be the result, in part at least, of anaphylaxis due to ergot.

Quinin after Operation.—A. Bonnot, (*Journal A. M. A.*, January 9, 1915), gives his experience with the use of rectal injections of quinin hydrochloride after operative procedure. He first noticed the good effects in a case of appendicitis in which he had instructed the nurse to give the patient 10 grains of quinin hydrochloride every six hours until the patient was able to take it by the mouth. The nausea and vomiting, gas pains, backache and postoperative thirst were lacking in the patient and he has since used it in later laparotomies with strikingly good results. In all cases, the postoperative thirst was much retarded, gas pains were lacking in nineteen cases out of twenty, and in none was there the usual backache. In only four cases was nausea and vomiting pronounced, in ten there was none, and in six it was only slight. Dr. Willis Young of St. Louis has also used this method with similar results.

The Effects of Alcohol on the Circulation.—C. C. Lieb, (*Journal American Medical Association*, March 27, 1915), concludes from experiments on cats that while whiskey may raise momentarily the systolic blood pressure and thus show an apparent circulatory stimulating effect, it decreases cardiac efficiency, and raises disproportionately the diastolic pressure as well as pulse pressure.

RATIONAL ORGANOTHERAPY

Conducted under the editorial direction of Dr. Henry R. Harrower.

Migraine an Endocrinous Disorder.—

One of the most annoying and persistent aches to which the flesh is heir is migraine—"a nervous affection marked by periodic headache, often onesided, and accompanied by nausea, vomiting and various sensory disturbances" (Dorland). This disorder remains more or less of a puzzle because there are still differences of opinions as to its etiology.

Naturally the symptoms associated with the headache lead one to suspect an intestinal origin and, doubtless, alimentary toxemia is a factor. Various other conditions—dental caries, nasal and pharyngeal disease, eye-strain and vasomotor neuroses—have been given as supposed causes of migraine.

In a recent issue of the *Medical Council*, (September, 1915, p. 29) M. Shoyer asks which of the usually supposed causes of migraine can be responsible for its hereditary aspects? For heredity plays an important part in no less than 90% of the cases. This writer also reminds us that migraine is more common in women and that it very often begins at puberty and disappears at the menopause. He, therefore, suggests that migraine may be a disturbance of some internal secretion, perhaps of the corpus luteum, the thyroid or the pituitary body; and urges a more careful consideration of this disease in connection with its endocrinous relations and also its treatment with corpus luteum alone or associated with small doses of thyroid. (He also advises the addition of suitable doses of *cannabis indica*).

Kovalewski noted that migraine frequently disappears during pregnancy, to return after delivery; indicating that the increased activity of the thyroid, which it is well known occurs at this period, exerts some mysterious influence which stops the headaches.

For some years data has been accumulating which connects the incidence of migraine with ductless gland disorder, and thyroid extract has been used with varying success by a number of writers. Leopold Levi, of Paris, was among the first to voice this idea and in his book "*Études sur la Physio-pathologie du Corps Thyroïde*" (1908) he reports six cases of migraine which were successfully treated with thyroid extract. All of them showed other coexisting signs of thyroid insufficiency (apathy, cold extremities, constipation, articular pains, dry skin, a tendency to obesity, etc.) One case of hereditary migraine in a young matron was given 0.20 gm. (3 grains) of thyroid per day. Weekly attacks which had come on regularly for nearly twenty years, were attenuated and practically stopped, and the benefit lasted three months after the treatment was stopped.

Charcot, the famous French neurologist, has remarked a not uncommon association of migraine with chronic rheumatism and tells that in his clinic both these conditions have been benefited by thyroid treatment.

Gauthier in his book "*L'Opothérapie Thyroïdienne*" (1913) draws special attention to the incidence of migraine in connection with disturbances in the sexual life of women, and states that in more cases than one is likely to think, migraine is either of thyroid or ovarian origin. He relates the case of a young girl aged 17, apathetic, dull, menstruating for only one year and subject to attacks of migraine for nearly eight years. She was given 0.10 gm. (1½ grains) of thyroid each day, divided into two doses, for eight consecutive days, and he states that the symptoms disappeared in a remarkable fashion.

With the above hints in mind it would seem that either thyroid or thyro-luteal extracts are deserving of application in all

cases of migraine in the hope that more than a few may be benefited. The dose of corpus luteum should be 5 to 8 grains three times a day and that of thyroid, $\frac{1}{4}$ to 1 grain given simultaneously with the luteal extract. This may be continued for 10 days or two weeks, and should preferably be timed to finish just about the time the menses are due. It may be repeated after a lapse of, say, two weeks; and, of course, will be far more likely to be effective if concomitant conditions of stasis, toxemia, etc., are properly cared for.

The Influence of Pituitary Extract on Blood Pressure.—It has been well and frequently emphasized that the principle which makes the extract of the posterior lobe of the pituitary body exert its well known action upon unstriated muscle, diuresis, etc., also brings about changes in the blood pressure. Most of the reports lead one to believe that it is a decidedly pressor substance and that its blood pressure raising properties are a deterrent to its use in all cases exhibiting hypertension. This is not so.

It is true that the action of this hormone upon the muscles of the heart and blood vessels gives it a most valuable influence in shock, collapse, cardiac asthenia and hypotension; in fact, it is a better remedy in this class of cases than adrenalin as its action is not so rapid and lasts much longer. In a personal letter from Sir Lauder Brunton, the famous clinician at St. Bartholomew's Hospital, London, he states that he found the action of pituitrin in heart cases more satisfactory than digitalis, strophanthus or the other well-known cardiac tonics. The action of preparations of this character is quite uniform—for they are all standardized very carefully before being distributed—and they may be used in practically all conditions and at all ages.

It is a peculiar thing that some of the organotherapeutic remedies have a double action—in some cases the results are quite opposite to those in others. This is of sufficient interest to warrant further discussion and a note is in preparation which will direct attention to this. (See "Organotherapeutic Paradoxes.") Pituitary extract is one of the most important of all these and its in-

fluence upon tension depends entirely upon the other conditions present. In sthenic cases with tachycardia and a hard pulse the pressure is frequently reduced, while in asthenic cases with bradycardia, irregular and weak pulse the pressure is often raised. Hence some of the limitations that have been imposed upon this method of treatment must be reconsidered.

Bate, in recent paper on "Posterior Pituitary Pharmacodynamics" (*Louisville Mo. Jour. Med. & Surg.*, September, 1915) reports a number of cases treated with pituitrin and the blood-pressure findings: "One case, a man in the sixth decade who had been a soldier, afterwards in an office for 30 years, had a blood-pressure of 240 mm. His tension was lowered to 180-190 mm. In a case of syphilis of the coronary arteries in a man of 70, a pressure of 130 mm. was maintained. In a doctor with chronic interstitial nephritis whose pressure was 190 mm., a drop of 10 mm. followed the use of the extract. In a young man aged 21, with exophthalmic goiter, the pressure dropped from 140 mm. to 126 mm. In an old man of 79, the pressure was lowered from 190 mm. to 140 mm. In a man of 28 whose pressure was 170 mm. following a period of debauchery, a hypodermic injection of the extract in ten minutes reduced the pressure to 140 mm. In a case of Addison's disease the pressure was raised from 110 mm. to 120 mm. These cases typify my observations as to the influence of pituitary extract on blood pressure."

There will be differences of opinion due to the unavoidable differences in clinical experiences; but the fact remains that there is an increasing feeling on the part of those who have made frequent use of posterior pituitary extracts that their influence upon blood pressure is a benefit rather than a detriment, and the figures given above will encourage many users of this remarkable substance to extend its use in their practice.

The Disturbed Hormonic Equilibrium.

—With our present increasing knowledge of the physiology of the ductless glands, it is clear that each of these organs supplies one or more chemical messengers or hormones to the blood plasma; hence it is obvious that there must be a balance be-

tween these numerous substances. This hormone balance is essential to the proper regulation of the numerous functions of the body and disturbances of it can easily be the direct cause, or at least the incidental cause, of many functional as well as organic disturbances. The hormone balance has been referred to in the following terms: "In the body every motive force is balanced by a retarding force and this nice balance is quite essential to health. If one or another of these factors gains the ascendancy, or per contra is diminished in intensity, disorganization must naturally result, and the extent of this disorganization can hardly be confined to the single area in which it is initiated." (Practical Hormone Therapy, p. 28).

The loss of this intercellular equilibrium is manifested in many morbid phenomena and its restoration should form an important principle of modern therapeutics. When one considers the intimacy of these various ductless glands, it is clear that a disorder in any one of them predicates disturbance in others directly or remotely depending upon the affected organ. Disturbances in one gland cannot but reflect immediately upon the activity of one or more of the others. In an interesting paper on "The Internal Secretory Glands," (*Lancet-Clinic*, September 19, 1914), Bayard Holmes says: "During the past year much evidence has accumulated to show that diseases of the ductless glands are usually plural rather than isolated and single. . . . Pluriglandular disease is the rule rather than the exception." Logically, then, the treatment of such conditions should be pluriglandular rather than monoglandular.

It is not possible here to go into the intricacies of the ductless gland relationships, but we know that very frequently, it might almost be said invariably, ovarian disturbances are complicated by thyroid disorder of greater or less extent; that pituitary disorders fail to cause associated disturbances in the thyroid and vice versa.¹ In a report of the Italian Congress of Medicine, 1912, it was officially stated that "the internal se-

cretions manifest an influence on growth, morphology and organic metabolism; on nutrition and the inherent excitability of the nervous system; on resistance to infections and intoxications; as well as a preponderating role in the causation of dyscrasias and morbid temperaments."

It is quite probable that the not infrequent cases of presumed monoglandular disorder which do not respond to the usual treatment might be more responsive if the fact that pluriglandular disease is more common than monoglandular disease was remembered, and the administration of suitable combined extracts was substituted for the present thyroid, pituitary, luteal or other single extracts which may seem to be the indicated remedies.

Hence the advantages of pluriglandular therapy are greater than those to be derived from the administration of the individual substances thus combined. Such combinations are made with a synergistic action in mind and it is especially interesting to note that "the degree of stimulation exerted by the administration of the hormone-bearing substances is in direct ratio to the need for such stimulation, i. e., an extract is more efficient when a corresponding active principle is deficient in the body than when present in normal amounts; hence in a combination of several extracts the principal action is the one which is deficient—that is to say, the more it is needed, the more useful it is."

Pancreas Organotherapy in Glycosuria.—There are a number of reports in the literature indicating that pancreas therapy is probably the most beneficial adjunct to the dietetic treatment of diabetes and additional evidence of the experimental value of this treatment will be found in a recent abstract in the *Journal A. M. A.* (September 25, 1915, vol. LXV, p. 1148) of an article which appeared in the *Gazetta degli Ospedali e delle Cliniche*, (August 10, 1915, vol. xxxvi, p. 848). Massaglia reports a series of feeding experiments upon guinea pigs suffering from an artificially produced pancreatic insufficiency. According to this investigator's findings, the glycosuria which resulted from the pancreas insufficiency was arrested or attenuated, when extracts of the pancreas were given

¹ Already several interesting clinical reports which go to prove this have been included in this department. See especially: "Combining Thyroid and Pituitary Extracts" (July, 1915, p. 576), and "The Internal Secretions in 'Run-down Conditions'" (Aug., 1915, p. 639).

to the animals. Quite an interesting development of these experiments is indicated in the following statement: "When the pancreas extract was given with the sugar, no sugar appeared in the urine unless extraordinary amounts had been taken." Massaglia believes that his experiments justify the use of pancreas extract in clinical diabetes of pancreatic origin, and this agrees with the clinical findings of a number of physicians in this country. A full consideration of this will be found in an article by the writer in the *New York Medical Record* (June 20, 1914) entitled, "The Langerhansian Hormone and the Hormone Treatment of Diabetes." Interested readers may have a reprint of this monograph by request, on receipt of a postage stamp.

Skepticism is Still too Common.—Our attention was recently called to a brief note quoted in the *Medical Council* (September, 1915, p. 59) which it may be well to reprint here in order to point a moral: "We have had corpus luteum, pituitrin, parathyroidin and others of the glandular preparations put up to us. Now comes 'Duodenin.' May we not expect jejunedin, ileidin, cecumidin and even appendenin to shortly make their appearance? Nothing is impossible with some of the drug firms!—*Bulletin Butler Co. (O.) Med. Society.*"

The above quotation contains a good reason why some physicians become obsolete—"back numbers" they are called colloquially, and, too, why others who are ready to look into a subject which *may* have some benefit in it for them, become successful and up-to-date practitioners.

The men who were guilty of working out these preparations and the manufacturers who prepared and "put up to" the members of this county society such wonder-working (no other word for it) preparations as pituitrin or corpus luteum, deserve the lasting appreciation of the profession, just as they doubtless already have from many a thankful patient.

There is nothing amusing or peculiar about "duodenin." It is a secretin-bearing duodenal extract and as such is worth just as much consideration as other organotherapeutic remedies are now getting. It may not be easy for some of the ardent users of

pituitary or luteal products to realize that less than 10 years ago we did not know of them at all!

While there are still many skeptics and more ignoramuses, none can deny the value of these and other organotherapeutic agents, nor can any one rightly refrain from giving praise to those whose admittedly mercenary proclivities have caused them to perfect and market for profit, such products as those derided in the quotation above.

Herbert Kaufman once wrote: "We jeer innovation, and then cheer in ovation."

Anterior Pituitary Substance in Bronchial Asthma.—A series of clinical experiments which may be of much practical value, were recently carried out by Warfel in the Indianapolis City Hospital (*Indianapolis Med. Jour.*, July, 1915) to demonstrate the possibilities or organotherapy in the treatment of bronchial asthma. While the administration of anterior pituitary substance or extract in this condition was and still is empirical, it is well known that this extract has been given with encouraging results in certain developmental disorders and irregularities of metabolism in which the endocrinous organs are intimately concerned.

Since the paroxysms of asthma are frequently controlled in a remarkable manner by injections of adrenalin, Warfel wondered if there might not be a definite hypoadrenia which could be modified by organotherapy. He proposed to do this by recourse to one of the peculiar phases of organotherapy—the use of extracts from an organ or organs which indirectly increase the physiologic activities of a hormone-producing organ which is in intimate relation to the organs from which the extracts are made. Incidentally it might be remarked that adrenal insufficiency is frequently benefited by certain glandular extracts or combinations of extracts other than the adrenal substance itself.

At all events Warfel selected seven cases of bronchial asthma, as nearly typical as possible, and to each gave $2\frac{1}{2}$ grains of the desiccated anterior lobe substance four times a day. His article contains a report of each of these cases and the conclusions drawn seem to indicate that this treatment offers

much encouragement in the treatment of a condition which is not easily influenced by other therapeutic procedures.

Warfel's report indicates that each case thus treated showed a marked improvement in the prominent symptoms within 48 hours. The treatment was continued for periods ranging from ten days to seven weeks with most encouraging results. The expectoration was decreased, a circumstance which was accompanied by a feeling of dryness in the mouth and throat which, however, was relieved by sipping water. The distressing dyspnea disappeared entirely. In two of the seven cases there was a considerable trace of albumin in the urine which disappeared after the treatment had been continued for a short time. The blood pressure did not seem to be influenced either up or down; and Warfel, while admitting that the number of cases was limited suggests that as the results secured in this series were so generally favorable and constant, further trials of this very simple procedure are desirable in other similar cases.

In a recent communication (October, 1915) to the conductor of this department, Doctor Warfel mentions that since the publication of his first report, he has treated six additional cases of bronchial asthma as outlined above, "with uniformly good results."

Bile Feeding in Biliary Obstruction with Fistula.—Before the New York Academy of Medicine, March 5th, 1915, Gerster (*Medical Record*, October 2, 1915) reported a case in one of the surgical wards of Mt. Sinai Hospital of a man with a pericholecystitic abscess which had been opened and drained. The gall-bladder had also been drained. After seven weeks of very slow convalescence the general condition was poor, there was marked emaciation, the pulse was weak and the stools were almost white. All of the bile was escaping from the fistula. It was temporarily closed, but cramps and jaundice indicated an evident obstruction of the common duct.

As a last resort, since further operation was inadvisable, the bile was collected from the tube in the fistula and administered to the patient in doses of eight ounces twice daily, through a tube which was passed directly into the stomach.

This resulted in obvious benefit, there was no nausea at any time and the appetite increased; in fact "there was a remarkable improvement in the general condition." In two weeks it was possible to remove a stone which was impacted in the ampulla of Vater, and recovery followed.

Gerster concluded his report by saying that the administration of bile in physiological quantities, as described, is a method which seems to be worthy of an extended trial.

It might be helped also in other cases of malnutrition and asthenia with biliary stasis and fecal findings which indicate that there is a deficiency in the flow of bile (not necessarily in cases with biliary fistulae as just outlined) to give fresh ox gall in doses of 2 to 8 ounces, once or twice a day by means of a stomach tube. Practically nothing has been done with this form of treatment, and it looks as though it might be of much value in suitable cases.

Thyroid in Chilblains and Raynaud's Disease.—These two conditions, the one very common and the other quite rare, are both vasomotor disorders and intimately allied with one another. "Dead fingers," the expressive but unscientific term for another annoying condition, are frequently due to the same fundamental etiologic factor.

These differing degrees of "vasomotor syncope" or asphyxia seem to have a thyroid origin; at least they are benefited by thyroid therapy as we shall shortly see. Raynaud's syndrome, it will be recalled is a local circulatory disorder with single or symmetrical areas of gangrene.

Osborne, of Yale, (*Am. Jour. Med. Sci.*, 1915, cl, p. 157) concludes that the syndrome described by Raynaud is not a distinct disease, and that it is a result of disturbances in one or more internal secretory glands. There is no real disease of the vessels; but their vasomotor control is abnormally disturbed with a resultant profound contraction or spasm. There is always some disturbance of the thyroid gland, perhaps some diminution in the production of its "vasodilator stuff," although other ductless glands may be simultaneously involved.

According to Osborne, thyroid treatment,

judiciously applied, causes improvement in the majority of cases, and in some it actually cures. His paper is based on eleven cases. Nitroglycerin is always of temporary benefit; and, of course, local applications of heat are indicated.

Strangely enough, almost simultaneously with Osborne's article, there appeared a communication by Sir Lauder Brunton (*Lancet*, July 24, 1915, p. 161) regarding "Functional Diseases of the Arteries" which takes up this same subject and reiterates the value of thyroid preparations in conditions of this character since they are "useful in lessening a tendency to vascular spasm." Brunton states that thyroid extract, given in small doses, say a grain or so, will prevent the recurrence of chilblains (which is a condition of localized peripheral spasm of the blood vessels quite similar to that which results in Raynaud's syndrome, though it is fortunately not so marked or so lasting). While not invariable in its action, Brunton finds that thyroid extract is beneficial in many persons who otherwise suffer much from chilblains, and he also believes that he has seen improvement from this medication even in elderly patients who were suffering from arteriosclerosis and high tension.

Just how these results are brought about we do not know. There is much yet to be learned of the physiologic action of the thyroid and its various "stuffs," as Osborne, not willing to use the term "hormone," calls them. Suffice it to say that when such prominent therapeutists recommend the empirical use of thyroid gland in chilblains, Raynaud's disease and other similar circulatory disorders in the extremities, we can with advantage follow their example and thus add to the already long list of conditions in which thyroid extract is given with benefit.

PRACTICAL POINTS.

"Pituitary extract is the greatest addition to modern materia medica."

Psychasthenia is usually associated with some endocrinous disorder, particularly of the thyroid gland.

In prostatic disease, not the acute in-

fective conditions, try extract of prostate gland, 5 grains, with or without thyroid extract, $\frac{1}{4}$ grain three times a day.

"The Ductless Glandular Diseases" is the name of a new book (translated from Falta's original German by Meyers) which will interest readers of this department.

Menstrual suppression may be of thyroid or pituitary origin. Extracts of either of these glands have been given in this condition singly or combined, and have frequently reestablished this function.

As a diuretic in severe anuric or dysuric conditions, inject a half to one cc. of pituitary liquid by intramuscular or, in extreme cases, intravenous injection.

Severe hemorrhages, especially of an oozing nature, are often successfully controlled by injections of coagulose, a preparation of blood serum precipitate.

Trypsin in Tuberculosis.—Solutions of trypsin are available for injection into localized tuberculous infections. The benefit from such treatment is often marked.

Pituitary for "After Pains".—The severe pains which not infrequently follow labor may be controlled by a single dose of 1 cc. of pituitary liquid. They rarely follow labors in which this remedy has been given.

Thyroid in Psoriasis.—Thyroid extract may give quite remarkable results in psoriasis. It must be administered cautiously in doses of 1 grain, or less, twice a day for some time.

Alcoholism is invariably accompanied and its manifestations aggravated by the results of disorders of the internal secretory glands which result from the poison. Pluriglandular therapy is a rational adjunct to the treatment of chronic alcoholics.

Morphine and Pituitary in Labor.—If morphine has been administered during labor, pituitary, if given, will not be so active. In such cases either give a larger dose of pituitary or, better still, a second dose in 20 minutes.



THE ANNOTATOR

Sepsis and Antisepsis.—Before the war commenced asepsis reigned supreme in almost all the hospitals of the world, as well as in the private practice of the majority of medical men. It had become almost the fashion to sneer politely at antiseptic methods and to regard them as antiquated if not obsolete. However, the war has changed con-



siderably this point of view, and to some extent, antisepsis may be said to have come into its own again. This should not be understood as meaning that opinions are unanimous on the subject, for unfortunately a somewhat, bitter controversy is raging among British surgeons as to the relative virtues of asepsis and antisepsis in the treatment of wounds. Some hard and fast advocates of asepsis, including Sir Victor Horsley who is indeed the high priest of asepsis, declare that Listerism is a fetish, while other no less distinguished representatives of the surgical profession aver that the war has demonstrated clearly the fact, that under certain conditions antiseptic methods are the only sure means of successfully treating wounds.

Much interest, therefore, has been aroused by a statement in the *Medical Press and Circular*, (August 25, 1915), that wounds are being treated experimentally by British surgeons at the front by unproved methods in which antisepticism is ignored.

Considered calmly and fairly there can be no doubt that aseptic measures as carried out in many cases in modern hospitals are effective and satisfactory. But a battle-field is very unlike a modern hospital and it is obvious that strict aseptic measures must be most inadequate under such

conditions. Antiseptic measures would seem therefore to be imperative in the treatment of septic wounds, where there is no possibility of resorting to the elaborate equipment and hygienic advantages of the up-to-date hospital. No less an authority than Professor Tuffier, of Paris, has voiced his opinion that in war antiseptic measures are a sheet anchor, and Sir Watson Cheyne and many well known British surgeons are agreed as to the correctness of these views.

It is interesting to note in this connection that hydrogen dioxide has proved its value in the treatment of certain wounds incurred in trench warfare, notably in gas gangrene and tetanus. Carrel, formerly of the Rockefeller Institute, who has charge of a French military hospital, has recently announced some remarkably gratifying results from the use of a new antiseptic solution incorporating calcium chloride as one of its principal ingredients, while Kenneth Taylor, another well known American surgeon has called attention to the exceptional value of quinine as an antiseptic, especially for overcoming gas gangrene. All of these intensely interesting announcements and reports point to the significant fact that surgery owes much to the principles of Listerism and in the presence of the conditions presented by modern warfare, with the practical certainty of all wounds being infected antisepsis and antiseptic methods surely fill a place from which they will not soon be deposed. The problem of the moment seems to be to obtain an antiseptic that will exert potent bactericidal action without offering irritation or injury to the wounded and infected tissues. This has been the problem of antisepsis from the first, but with the matchless opportunities for study of wound infections presented by the great conflict in Europe and the type of men who are devoting their

thought to the question, it may be confidently expected that the ideal antiseptic will soon be determined.

Music at Surgical Operations.—The phonograph has been used in operating theatres in Kane, Pa., and Dr. Evan O'Neil, of that town, so informed the *Journal A. M. A.*, on June 6th last. Now in the *American Journal of Surgery* for August, 1915, Dr. W. P. Burdick, also of Kane, writes of the success that has attended the innovation. There was a great outburst of wit and humor on the appearance of the first announcement, as might have been expected, and it is not improbable that the group of interns and nurses in the pit of the operating theatre irresistibly suggested to the on-lookers the chorus of a comic opera, while those assistants themselves, probably young and retaining some vestige of the layman's frivolity, may have found it hard to resist lifting a rhythmical foot as the machine ground out its "trivial, fond records."

Doctor Burdick, however, is very much in earnest in his communication to our Texas contemporary. "If mankind was always consistent," he writes, "the idea of suitable music as an accompaniment to surgical clinics would seem entirely rational." The attitude of a patient about to be relieved of a distressing and possibly fatal lesion, should be one of joyful anticipation, instead of which the subject now enters the theatre after a tearful farewell to family and friends, with such feelings of horror and dread as to be on the verge of collapse. This frame of mind is not alleviated by the demeanor of the surgical staff, the whispers of the nurses, or the almost complete silence broken by the harsh rattle and banging of instruments. In Kane Hospital they are endeavoring to change all this, to reassure the patient and dispel his fears. The phonograph suggested itself by its beneficial influence in the wards, where it gave great pleasure, although it was kept going from early morning till night.

On the eve of an operation Doctor Burdick has a talk with the patient, in which he encourages him in every way, assures him of probable relief, promises absolute lack of pain during the operative ordeal, and

tells him of the coming use of music as a sort of keynote to the cheerful attitude of the staff toward the operation. He inquires into the patient's nationality and asks if he has any favorite tunes; and when he is ushered into the operating room next day and the anesthesia begins, the phonograph is softly playing one of the airs thus selected. There is no hilarity; Doctor Burdick feels like Jessica in the *Merchant of Venice*: "I am never merry when I hear sweet music." The effect is all that could be desired; the patient is diverted from the start of the operation to its completion without the necessity of conversation. An ingenious idea was to begin again with the phonograph—which had naturally been stopped when anesthesia was complete—as soon as the patient showed signs of recovering consciousness, which induced a belief, comforting somehow, that the music had continued throughout the operation.

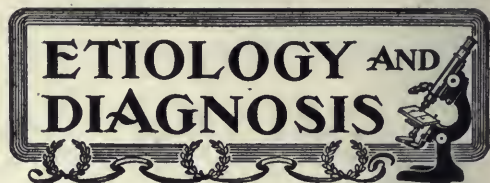
We think that the authorities of Kane Hospital are fully justified in their practice and have discovered a new and valuable agent in surgery, as clever in its way as the Crile induction of anoci-association.

The Insanitary Cigar Cutter.—There are many unhygienic customs that are so commonly practiced that they pass unnoticed. The public, in fact, will disregard even gross deviations from the proper and prescribed course, so long as the comfort or convenience of its members are not disturbed. For instance, in New York City traveling by the subway at certain periods of the day is attended by conditions not only manifestly unhealthy but fraught with grave danger to those forced to use this means of transit in going to and fro between home and work. And yet if it were left to the inhabitants of New York and environs to take steps to correct the evils that outrage every sense of caution or decency not even a protest against the existing state of affairs would be made. It is well indeed that we have an energetic health department headed by a strenuous and capable medical officer who recognizes the menace of the situation and has courage to undertake its correction.

Not infrequently, moreover, many of the small and seemingly inconsequential things

deserve no less careful attention, and often matters which appear trivial at first thought, when looked into with greater care present a much more important aspect. The counter cigar cutter is one of these small and superficially insignificant questions which by reason of its apparent unimportance has been overlooked up to the present and passed unnoticed. If one stops to consider it, however, from the standpoint of the public health, it will be, at once, obvious that it merits the closest attention of the health authorities. When it is recognized how easily the cigar cutter may be the means of spreading infection, and infection of a dangerous nature, the days of this article of convenience will be numbered. To illustrate, a person with syphilis with mucous patches in his mouth, unfortunately there is no way of knowing how many such are at large, will often after he has first held his cigar in his mouth, and covered its end with infected saliva, step to the counter and put his cigar into the cutter. This thoughtless yet dangerous habit is so common that it can be witnessed time after time at every cigar stand. Undoubtedly it has been one of the principal means of spreading infection among those who smoke cigars. Many and many a case of sore mouth to say nothing of graver affections have been due to the public cigar cutter, and it is high time that an agent so potent for harm was abolished. The public drinking cup has been done away with in most enlightened communities, and none can deny the wisdom of this action. It remains for our health authorities to see that the public cigar cutter, with dangers as great as, and in some ways even greater than the public drinking cup, be likewise removed by law from further opportunity to convey dangerous and loathsome diseases.

Alkalies.—A Dutch biological chemist says that alkalies do not diminish the formation of uric acid in the system, but rather aid it by diminishing the pepsin in the stomach and decreasing metabolism. He finds that hydrochloric acid aids in breaking down uric acid into urea, and thus reduces the amount of uric acid in the system. —*Exchange.*



The Tonsils in Relation to Systemic Diseases.—Parker, in an article on this topic in the *Journal-Lancet* of April 1, 1915, draws the following conclusions:

1. The size of the tonsil is of negative importance.
 2. A small submerged tonsil with crypts covered over may be most dangerous.
 3. In recurrent tonsillitis, regardless of their size, the tonsils should be removed.
 4. Tonsils should be removed from tuberculous children, even though they appear normal. The writer would also remove the tonsils from children living in a home with open tuberculosis.
 5. A remnant of a tonsil left after incomplete removal when covered by a scar becomes a most dangerous focus of infection.
 6. Cheesy, foul-smelling crypts should be eradicated, or good drainage established by splitting the crypts.
 7. Perfectly normal-looking tonsils with no history of tonsillitis are frequently found to exude pus upon pressure.
 8. Ragged, spongy tonsils are nearly always infective.
 9. In all systemic infections in which diligent and competent search fails to remove other source of focal infection, the tonsils should be removed.
 10. Individuals known to be sensitized to streptococci should have the tonsils removed as a prophylactic measure.
- A culture taken from the interior of the tonsil after removal may be made use of for making vaccine for possible future use, which, in some cases, may be of inestimable value.
- Focal infection in the tonsil should be treated by complete enucleation. There is no physiological reason why a part of the tonsil should remain.

Causes of Cancer.—Bulkeley (*Medical Record*, May 15, 1915), declares as a cancer incidence, the increased consumption of meat, quoting the per capita increase in England as doubled during the last fifty years, being recently in that country 130 pounds per person a year. In Italy, where he declares the least amount of meat is consumed of any of the European countries, cancer is the least frequent; while in the County of Kerry in Ireland, where meat is seldom eaten, the death rate from cancer is less than that of England. The consumption of meat in the United States in 1909, he declares, was 172 pounds per capita, while there cancer has increased over 25 per cent. since 1900.

Bulkeley also charges alcohol with being a

factor in the increase of cancer in both England and the United States and cites certain occupations where alcohol is freely indulged in, bartenders, printers and others, as furnishing numbers of cases of cancer.

Coffee comes in for a causative factor in the increase of the cancer death rate. Holland, he states, is the largest consumer of coffee with the largest death rate from the disease. Hungary consumes the smallest amount of coffee and has the smallest death rate, 39 per 100,000 persons. The United States we are told, consume one-third of all the coffee grown, more than Germany, Austria, Hungary, France and the United Kingdom combined. England and her colonies, where cancer is steadily increasing, consume one-half of the world's output of tea.

Bulkley concludes that the prophylaxis against cancer must depend upon the avoidance or restriction in the use of meat, alcohol and coffee.

Green, *Edinburgh Medical Journal*, January, 1915, reports upon the investigations in the cancer incidence in various sections of France. He found the greater prevalence in Central and Northeastern France, the least in the South and West. He believes that the difference lies in the character of the fuel used in these several districts. Where the greater cancer mortality existed the fuel was coal, especially rich in sulphur; contra, where wood was used for fuel, cancer was rare. A similar condition, we are told by Green, exists in Scotland.

Neither of these theories is based on the scientific study of cause and effect, and we believe that statistics carefully and scientifically compiled would not prove cancer incidence in either of the above other than coincidence. Since the dawn of history we have had innumerable causes of cancer, none of which have been proven. There have been very many treatments advocated, none of which, excepting radical surgical measure, have given a cure. What we need is proven scientific facts and less loosely formulated theories.

Sarcoma of the Prostate.—Dr. Descuns (*Am. Jour. of Urology*, Sept., 1915), draws the following conclusions:

1. Sarcoma of the prostate is an infrequent disease and usually occurs in young people.

2. It makes itself manifest by urinary disturbances, more frequently by an attack of retention of urine and by disturbances in defecation due to compression of the rectum. Rectal examination allows one to locate the seat of the growth. The general health deteriorates rapidly. In adults the evolution is less rapid.

3. The prostate presents an hypertrophy and varies in consistency. The lymph-nodes are usually intact. Microscopically there are sarcomata composed of a single tissue (round cells or fusiform cells, polymorphous cells and lymphosarcoma) and less frequently sarcomata composed by multiple tissues (myxosarcoma, angiosarcoma, chondrosarcoma, adenocarcinoma,

myosarcoma, fibrosarcoma and malignant rhabdomyoma).

4. One should not mistake prostatic sarcoma for sarcoma of the bladder, hydatid cyst of the small pelvis, abscess of the perineum and above all for hypertrophy or cancer of the prostate.

5. In children a purely symptomatic treatment should be resorted to. In the adult, if the diagnosis has been made early in the process, prostatectomy should be attempted.



Pituitrin for Intestinal Stasis.—Dr. Elmer H. King of Allston comes to the following conclusions as to the contraindications of pituitrin in cases of intestinal stasis (*N. Y. Med. Rec.*, Jan. 30, 1915).

In pneumonia the added load upon the heart of an increased blood pressure, and the constriction of the coronary arteries imposed by the use of pituitary extract, increases the distress of the patient. Yet the intestinal drainage can be secured when all else fails with pituitary extract carefully given and later held by vigorous catharsis and enemata.

Pituitary extract should be very carefully given when the heart rate is unusually high, 140 or more, when there is marked intermittency of the heart, or in the presence of cardiac decompensation. In angina pectoris, on account of the vasoconstriction produced by pituitary extract, its use is probably absolutely contraindicated. In subacute peritonitis, as for example the puerperal peritonitides and in post-operative intestinal paresis occurring in chronic peritonitis, as for instance tuberculous peritonitis, pituitary extract is extremely useful. It would seem that we ought not to let a patient die from intestinal paresis, even in the presence of subacute or chronic peritonitis. In the acute cases, with grave intra-abdominal lesions tying up the intestine, the extract is usually useless. Each case however is a kingdom unto itself and must be decided upon its own merits.

Conclusions.—I. Pituitary extract intravenously given will empty the intestines, both large and small, per anum, oftentimes the stomach as well, if this contains intestinal and liver excrement, promptly and thoroughly, in by far the large majority of uncomplicated cases of postoperative intestinal paresis.

II. Conjoined with treatment directed toward the essential causation in any given case of intestinal paresis, proving refractory at first to the use of pituitary extract alone, it will retrieve many lives otherwise forlorn.

III. In uncomplicated postoperative cases, its action is promptly curative, and far more efficient than morphine, with reference to per-

manency of effect, in relieving pain due to intestinal distention or to intestinal spasm. But in a few such cases the bowel will yield to pituitary extract only after reaction from grave concomitant shock.

IV. In any given case of intestinal paresis it affords an additional means of emptying the bowel, peculiarly applicable, transcending in efficiency any we have heretofore possessed.

V. It is possibly curative of functional, actual, obstruction.

In actual organic obstruction, after a vent is established or the continuity of the bowel is assured, it may be effective in emptying the paralytic section of the gut.

Treatment for Dysentery.—Dr. Burnett (*Med. Summary*, Oct., 1915), states that the following will be found useful in many cases of dysentery and bloody diarrhea: First, give ten or fifteen drops of laudanum; the next hour, two grains of acetate of lead; the third hour, fifteen to thirty drops fluid extract of ergot; the fourth hour, one or two alcresta ipecac tablets; the fifth hour, thirty grains to two or more drams magnesium sulphate; the sixth hour, twenty to thirty drops of dilute sulphuric acid; after the six doses are taken, repeat same way, or, in other words, each of the six remedies are given every six hours, varying the dose as needed.

The same treatment is of value in various forms of diarrhea, as well as in many cases of menorrhagia and prolonged lochial discharge. If desired quinine sulphate can be added to the sulphuric acid. If the quinine does not seem to be needed, the sulphuric acid and magnesium sulphate can be combined, or, if desired, all three of these drugs can be combined. If the magnesium sulphate and sulphuric acid are combined, this will give two doses at once, and if desired, the tincture of myrrh or Thompsonian No. 6 can be used in place of the missing dose, which is a valuable stimulant as well as an antiseptic. Dose, ten to thirty drops. Emetine could be used in place of the alcresta ipecac (Lilly) tablets, but, as a rule, most patients will prefer internal medication in place of hypodermics.

Ergot is a neglected drug in dysentery. Lead acetate is of great value in controlling hemorrhage from the bowels. Opium is of value in relieving pain and checking discharges. Sulphuric acid and magnesium sulphate correct the liver as well as favoring other good results. The action of ipecac is very well understood. I am aware that this is a "shot gun" treatment, but results are what this line of treatment will usually give.

The Treatment of Syncope.—The treatment of syncope as a symptom, irrespective of the cause, says Dr. M. B. E. Sutton (*N. Y. Med. Jour.*, Oct. 2, 1915), consists in:

1. Laying patient flat on back, head lower than body.
2. Loosening all constrictions.

3. If possible, shading patient from light on recovery.

4. Keeping crowd away.

5. Sprinkling cold water on face and chest.

6. Rubbing extremities toward heart.

7. Stimulation: Causing inhalations of ammonia; if patient is conscious, give one dram in two ounces of water and repeat, as required.

If the attack is severe,

1. Rub spine with ice.

2. Mustard plaster over cardiac area.

3. Internally, hot black coffee, no sugar.

If much hemorrhage, bandage extremities.

If due to mental excitement, no cutaneous stimulation; give opiates. Chloral is not advisable.

The Treatment of Infected Wounds.—Dr. Douglas H. Stewart of New York, in the *London Lancet*, June 12, 1915, offers the following method of treatment for infected wounds:

A saturated solution of sodium perborate (about 2½ per cent.) may be quickly made by adding to a cup or other vessel full of water a little greater quantity than can be dissolved, using the residue as an index of saturation, and this solution may be poured into a wound in the identical manner or mode that is employed with the use of H₂O₂. Effervescence is not synonymous with efficiency, and if the perborate solution yields rather less bubbling its well-known bactericidal effects would tend to prove that some of its gas was more profitably expended than merely escaping into the air. The solution is alkaline but perishable. The powder form is, however, very stable. Consequently a small package (say, ¼ to ½ oz.) could be easily carried by each soldier. Sufficient of this could be dissolved in his cup, and the solution poured into the fresh wound by the man himself or one of his comrades, and the remainder of the treatment left for more skillful hands. The tincture of iodine, when applied to a wound in the same or a similar manner, burns like fire, it slows healing, and instead of affording protection against anerobic infections, seems rather to roof over and afford them shelter. Were our forbears so very far wrong in expressing approval of "laudable pus" because open septic wounds with abundant streptostaphylococcus overgrowth are not ideal homes for the germs of tetanus, but rather unfriendly or unfavorable environments?

Shuford's solution was planned for hypodermic use. Its formula is: Sod. bibor., acid. salicyl. aa 3i., acid. carbolic. 3iii., glycerin. 3i. This is too strong for a wound application, though he has used it when all the conditions apparently (certain soils, toy pistol wounds, etc.) promised tetanus, but the wound will slough if it is applied more than once; consequently it has been modified to sod. bibor., acid. salicyl., acid. carbol., aa 3iii, glycerin. 3iss., aq. q. s. ad 3iv. The wound should be filled with this as it is germicidal, analgesic, and altogether an improvement over iodine.

The growth of granulations through the meshes of a gauze bandage renders sticking and tearing off necessary, but uncomfortable, accompaniments to its removal. Sheets of

toilet paper (wood-pulp) may be folded or rolled into drains or lamp-wick shapes, the wound bridged diagonally or longitudinally with these which are to be roofed over with smooth sheets, and then gauze, put outside of and over all, will not stick, as there is a shield between it and the growing granulations; or if the paper does adhere, it may be quickly softened and washed away by sponging with warm water and washing soda ($\frac{1}{4}$ per cent.). Further attention is facile and agreeable to all concerned because removal has not caused additional trauma.

Modern Treatment of Diabetes Mellitus.—

Tyson in the *New York Medical Journal*, April 3, 1915, states that medicines in the earlier stages of the disease have little value, while in the later stages they have still less. He thinks that their usefulness has for the greater part been determined empirically and that the list includes a great many. He mentions the salicylates, antipyrine, the bromides, veronal, opium and its alkaloid, codeine, and jambul. As in the list of cures for other obscure diseases, there are many secret ones, some of which he thinks may have slight value by being fortified by some ingredient of possible value. Why the salicylates are of any use whatever he does not know, but believes their use is followed occasionally by a temporary reduction of sugar to be found in the urine, especially in those cases in which there is much muscular pain. Opium and its alkaloids, morphine, codeine and heroin, are effective probably because of their sedative effect in lowering the stimulus conveyed from the central nervous system to the "sugar factory." He thinks that the bromides may help in the same way. On the other hand, however, opiates generally constipate and this is a detriment to successful treatment, while there is always the danger of the opium habit following their use. Tyson therefore uses them only as a last resort. He has never found jambul of any use when used alone. Arsenic is of some value in a few cases as he has noted a reduction of sugar excreted during its use and a return when discontinued. In other cases it has been entirely without effect. Alkaline waters are effective as is sodium carbonate. An important measure is rest in bed, especially in severe cases.

Lactic Bacillus Cultures in Cystitis.—The intravesical injection of cultures of the lactic acid producing *B. bulgaricus* has been warmly recommended by Newman, of Glasgow, as an effective means of controlling chronic, purulent bladder infections. A series of interesting communications have appeared in *The Lancet* (May 1, 1915, p. 933 and Aug. 14, 1915, p. 330. See also *Ibid.*, Feb. 24, 1912, p. 490 and Mar. 2, 1912, p. 570) in the last of which Newman answers a number of questions which have arisen as a

result of the interest aroused by his paper of last May.

Briefly the procedure recommended is this: One part of sugar of milk is boiled in 40 parts of distilled water for ten minutes and cooled. To 20 ounces at 70 degrees F. one tube of a culture of the *B. bulgaricus* is added and the solution (carefully prevented from contamination) is kept at the above temperature for four days.

After washing out the bladder—in severe cases with an irritating urine and an infection with organisms which decompose urea, a 0.025% solution of potassium permanganate, gradually increasing to 0.1%, is used; and in cases where there is a chronic mucous discharge, a solution of potassium hydroxide, one dram to the pint, is preferable as this alkali is by far the best solvent of mucus—two ounces of the culture are injected into the bladder and allowed to remain as long as possible. The acid fermentation is useful in two ways: The *B. bulgaricus* is extremely virile and in a contest with the septic organisms it is always the victor; while its own toxin—lactic acid—while harmless, is a good solvent of phosphates.

This treatment is carried out daily and regularity is essential for if it is interrupted before the bladder is thoroughly cleansed, the pyogenic organisms have an opportunity of reasserting themselves. The results are very good, especially in the chronic and obstinate cases. Newman declares that it is in "incrusted cystitis" the most conspicuous benefit is obtained from this treatment.

GENERAL TOPICS

Anti-Typhoid Vaccination.—We find in the *London Lancet* for June 12, 1915, page 1245, the following highly interesting reference to anti-typhoid inoculation:

In 1912 there were about 5,500 inoculations done with two cases of typhoid developing amongst them, and one of these two had only received one injection and came down with the fever a few days later, so that it is possible that he was coming down at the time of inoculation. Among the other men living under exactly the same conditions as the men who were vaccinated there were 220 cases of typhoid.

One of the most striking results of the vaccine was in a gang of about 35 men, who were camped within the city limits, and who absolutely refused to be vaccinated at first. In this camp 11 cases developed, and then the men began to ask to be vaccinated, which was done, and following it we had the only other case.

Drs. Maclaren, King and Green used the vaccine in the treatment of cases, using at each in-

jection small doses the first of 1,000,000 bacteria and doubling it every fourth or fifth day. They found that in those cases which were treated from the beginning of the disease the complications were almost nil, although it did not lessen the course of the disease at all. Those cases that were well advanced before they came in under treatment showed no effect at all, the vaccine here being more harmful than beneficial.

For 1913 we have not as yet received all the reports, so can only give an incomplete report. So far the total number vaccinated is 2,771, with one case developing fever, and against this there are reported 70 cases amongst the non-vaccinated. When all the reports are in, these figures will probably be between 8,000 and 10,000.

The conclusions that we draw from this work are:

1. We have a very valuable aid for the prevention of typhoid fever in the use of vaccine.
2. The name of vaccination should be abolished and inoculation should be used in its place.
3. When cases of typhoid come under observation early enough, most of the complications can be lessened.
4. The use of the method should be advocated in all places where men are to be in camp and under doubtful sanitary conditions for any period of time.
5. The period of immunity is apparently indefinite, probably equal to that produced by a single attack of typhoid.

Since this report was made the various lists to complete the work for 1913 have been sent to us by Dr. Mackid. The additional number vaccinated was 8,400 with only the one case developing, making a total vaccinated of 13,900, among whom three cases of typhoid developed. The figures read as follows:

Total number men employed.....	24,000
Total number men vaccinated.....	13,900
Number of cases among non-vaccinated	290
Number of cases among vaccinated.....	3

Salvarsan Manufactured in England and France.—We learn that salvarsan and neosalvarsan are being made in England under a license obtained in that country. They will be marketed under the names of kharsivan for the former and neokharsivan for the latter, or arsenobenzol and neoarsenobenzol; arsenobenzol being the chemical name of Ehrlich's original product. The chemistry is presumably the same as employed in their manufacture in Germany. The claims are identical as well as the dose and mode of administration, by the manufacturers in both England and France—Burlinghams Wellcome & Co. in the former, and Billon in Paris, France.

How far the claims for identity and efficiency can be substantiated, remains to be seen. Four

cases of arsenical poisoning, one fatal, have already been reported from these substitutes by J. Ernest Lane, London, in the *London Lancet* for May 1, 1915, page 934.

While the National Medical Research Committee have caused experimental assurance to be obtained that both English and French preparations are equivalent to the German in therapeutic effect, there may be a need of conservation for a time at least or until further experiments on the human body instead of on mice and rabbits are in evidence.

We hold no brief for the German manufacturers of these highly potent products, but chemical technic involves so many variations in the physiological as well as pathological and therapeutic potentials of the synthetic remedial agents, that we are not always certain that our efforts, however well intentioned, may not involve us in errors of judgment at least.

The Various Uses of Ergot.—There are many uses for ergot other than as an embolic in parturition, which we shall herewith endeavor to summarize: It is a hemostatic, indicated to contract the blood vessels, raise blood pressure, stimulate the heart in shock, collapse and circulatory depression, to contract the blood vessels of the brain and spinal cord, especially of the meninges when acutely inflamed, irritated or congested. It is useful in neurasthenia or in general weakness accompanied with insomnia; given at night it relieves congestive headache when there is absence of high arterial tension. Ergot will be found useful also in quieting the pains from irritation and inflammation of the nerves when the irritation is of central origin. It promotes activity of the bowels when there is intestinal muscular debility, paresis or paralysis, as in tympanitis after operations or when obstinate constipation is present. Given in connection with laxatives in ordinary constipation it often gives good results. In asthma due to nervous irritability or reflexes; those cases where there is persistent wheezing, and frequently recurring attacks at night, ergot will be found to give benefit. In hemorrhages from the lungs or kidneys; in epistaxis, menorrhagia, metrorrhagia, hypostatic, pulmonary and other congestions; in dysenteries with bloody stools and serous diarrhea; in vertigo associated with hyperesthesia of the scalp and head ache; uterine fibroids, bleeding hemorrhoids and in diabetes insipidus.

The physiologically tested product of ergot only should be used as it varies greatly in the crude product as well as in the fluid extract.

To Remove Stains.—Iodine stains can be easily removed if the article is washed immediately with naphtha soap and warm water. If the stains are dry they should be dissolved with either alcohol or chloroform before washing with the naphtha soap.

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Some Recent Studies of Pasteurized and Boiled Milk.—The relative resistance of raw, pasteurized or boiled milk is a most important problem. The claim has been frequently made, and insisted upon, that sterilizing by boiling, or partial sterilization by pasteurization, renders milk perfectly safe. The opponents of these methods, or rather those who refuse to see any good in them, declare that while boiling and pasteurization of milk are indicated under certain circumstances they are by no means ideal and that while in some respects they safeguard the health of the young, in other respects they are somewhat of a delusion and a snare.

With regard to the relative resistance of raw, boiled, and pasteurized milk, Schorer has stated not long ago (*Journal of Infectious Diseases*, 1912, Vol. II, p. 295), that pasteurized and inspected milk showed a greater increase in the bacterial content than certified milk. On the other hand, Ayers and Johnson of the U. S. Department of Agriculture, Bureau of Animal Industry (*Bulletin 126*), found that the rapidity of multiplication was the same in pasteurized as in raw milk containing the same number of bacteria.

Careful experiments more recently undertaken in Cambridge University Pathological Laboratory by Lucy D. Cripps,

M. B., and J. E. Purvis, and published in the *Journal of the Royal Sanitary Institute*, Oct., 1915, indicate that: 1. Heat renders milk a better breeding ground for such microbes as may get into it. 2. The effect of heat on the germicidal power seems to vary with the amount of heat, as indicated by the greater multiplication of bacteria in boiled than in pasteurized milk. At the same time, the decrease in the number of bacteria in the raw milk after twenty-four hours' incubation was remarkable and the relative increase in the pasteurized and boiled milk was considerably less than at two, four and six hours. Considering these results from a chemical point of view it has been definitely proved by Purvis, Brehant and McHattie that when milk is boiled, definite amounts of proteids, phosphates and fat are thrown out of solution, and it may be surmised that such changes indicate other definite chemical changes which make the constituents of milk more suitable for the growth of microorganisms. Further, it is well known that the enzymes of milk undergo definite changes by heat, and, in fact, are destroyed when milk is boiled. It may be that these enzymes are responsible for the germicidal power of raw milk, whereas in boiled milk they are absent because they have been destroyed; or again it has been suggested that the destruction of

the lactic acid bacillus by pasteurization facilitates the growth of undesirable bacilli; finally, where there is a mixture of saprophytic and pathogenic bacteria, the condition of raw milk favors the growth of the saprophytic type rather than of the pathogenic.

But whatever may be the cause of the relative resistance to infection of raw and boiled milk, the experiments clearly show that there is more danger of reinfesting boiled and pasteurized, than raw milk, and that, therefore, milk should be used as soon as possible after it has been pasteurized or boiled. This conclusion is strengthened when the unsatisfactory condition of the great bulk of the milk supply is considered, and the great possibility of the contamination of the milk in the homes of consumers, especially where the housing conditions are bad, and where there is a lack of knowledge of the principles of hygiene. As has been emphasized time and again in the editorial pages of this journal, pasteurization of milk is at best but an alternative, necessary no doubt under existing conditions, but, alas, all too often liable to abuse. By insisting for pasteurization that it renders entirely safe the milk so treated, too much is claimed. Indeed, it does not protect the milk from future contamination or infection at all, but rather renders it more liable to subsequent infection. Further, a feeling of confidence is created in the pasteurized product which is far from warranted, as has been demonstrated by the experiments of Cripps and Purvis. Such milk is too often a menace to the general public and especially a fruitful source of danger to infants. Little reliance, moreover, can be placed on the methods of pasteurization ordinarily employed commercially.

Pasteurization to be effective must be performed properly and scientifically and

the milk thereafter handled with the utmost care. Pasteurized milk carelessly handled in transportation or in the homes of the poor quickly collects bacteria and becomes highly dangerous to health. The problem of a fairly safe milk supply is still far from being successfully solved. The difficulties in the way of such a solution appear to be almost insurmountable but much can be done in this direction by an energetic and efficient board of health. The Health Department of New York has accomplished more to ensure a safe milk supply than the health boards of any other city in the world and its work should serve as an example for all health departments. It is not the intention of this editorial to decry pasteurization of milk, but simply to sound a note of warning. The method when correctly carried out is, under present conditions extremely valuable, and in some instances, perhaps, absolutely essential, but at the same time, it would be idle to pretend that it is a panacea and that by its employment, the whole question of a safe milk supply is settled or that an ideal food for the young is provided. Pasteurization is effective in proportion to the manner in *which* it is done and *when* it is done, and even then it cannot be regarded as an entirely satisfactory substitute for mothers' milk.

Sexual Ignorance the Secret of Sexual Excesses.—The violent mental storms concerning war babies that have swept Europe and America in the last few months have presented to thoughtful people a phase of sex relationship at once impressive and interesting, but in our opinion, none of the articles brought to our attention, whether by idealists, reformers or realists, have touched the vital issue. To the masses the one great

evil has been the indifference paid to marriage ceremonies. The prevailing thought seems to be that marriage, like charity, is able to cover a multitude of sins. The sins committed within the bonds of matrimony, however, are often as grievous as those incurred without sanction of the clergy. The sad indulgence of lustful passion protected by the laws of Church and State is little better than legalized prostitution. In extenuation, it may be pleaded that most married people sin in ignorance. They do not know the real function of the sexual act, and, as a consequence, are not aware for example that after conception has taken place, sexual indulgence, there is reason to believe, is a not infrequent cause of abnormality—nervous and otherwise—in the offspring.

To educate the people in respect to the essential details of sexual hygiene is the province of the physician. The time seems auspicious to explain to patients the sacredness of the procreative act and to make known the fact that its abuse—complete surrender to the sexual appetite—will entail future suffering upon posterity if not upon ourselves. The vitality wasted in this way by mankind could and should be utilized to increase mental capacity, to develop mental power, and in every way strive to promote the growth of better brain cells. In this way—and this way only—can we expect to provide the physical and mental heritage our children are entitled to.

Because the sexual instinct is the most powerful of human passions is no reason why an effort should not be made to control it by will power, just as we endeavor to bridle other appetites or emotions. Is it not true that to give rein to any passion, only increases its power to work evil? And does not man become master of his destiny to a large degree by the exercise of self-control?

The ideal we cherish may be too high for the majority at the moment, yet we have faith in tomorrow and in the human race. The natural leader to preach the truth in this matter is the earnest physician, who as champion of health and hygienic living should strive to eliminate sex abuse in all of its manifestations or wherever it is found.

Every physician is vitally interested in bringing into the world babies that are sound, physically and mentally. How best this may be accomplished is the all-important question. The public is deeply interested in the subject and is in a receptive mood. The people naturally look to the physician to point the way to the solution of this problem and avidly seek enlightenment from those whom by education and training they reasonably expect to possess a clearer understanding than themselves. How is it with us as medical men? Have we sufficiently familiarized ourselves with the manifold phases of this question and have we the requisite knowledge to qualify us to accept the responsibility of guiding and helping those who so urgently need our aid? The field of eugenics lies fallow before us and its cultivation promises a rich harvest if we have the courage and hardihood to attack first of all the great evil of sexual intemperance. Occasions for service are and will continue to be unlimited—may we rise to our opportunities and make the most of them for the uplift of all mankind.

When Doctors Disagree!—The newspaper controversy that has developed in connection with a Chicago doctor's refusal to operate on a case of imperforate anus is most unfortunate. At least it seems unfortunate to us, because it is not only futile and

can accomplish no good nor help to disclose any great truth, but is apt to create a great many false and ill-founded impressions, give rise to much heated and acrimonious discussion, and lead to a great deal of publicity which if not entirely distasteful to those receiving it, is nevertheless certain to hurt the whole profession from one end of the country to the other.

At the outset we do not wish any statement we may make to be taken as reflecting on the Chicago surgeon whose views precipitated the controversy. There are probably not a few who will second the *Journal of the American Medical Association's* hasty description of the affair as "a nauseating spectacle, etc." Many others may see in the discussion nothing but the most sordid aims and purposes. With these opinions we have no concern, for we are strongly committed to the idea that every one is entitled to form his own conclusions and think as he pleases.

As for ourselves offering any criticism of our Chicago colleague, or passing any judgment on him whatsoever, nothing could be further from our intention. Supposing that his views do differ from ours or his methods affront our sense of propriety, does it follow necessarily that he is wrong, all wrong? Does the fact that we hold opinions different from his, give us any right to impugn his motives or condemn his methods?

The habit of hasty criticism and condemnation is all too common in medical circles. It is high time that we let our fellow workers express themselves, freely and openly, without suspecting and accusing them of seeking selfish gain and personal aggrandizement. As a matter of fact, it is our firm belief and conviction that the average medical man is a great deal

more earnest and sincere than he is thought to be. It is a mistake to think that medical men, except in the rarest of instances, are not giving the best that is in them all the time. It is no less wrong, moreover, to attribute every act to selfish aims and desires. Doctors as we know them deserve a great deal more respect and approbation than they ever get. Their work is much better, their aims and intentions more praiseworthy, and their zeal and earnestness far greater than the world at large ever credits. And in spite of hardships, the ingratitude that so often constitutes their only reward for faithful work, and the constant presence of temptation, the great majority of physicians keep bravely on, optimistic, clean, and a credit to their profession. This describes the American physician as we know him, and because he is what he is, we are ready to listen to him. We may not accept his views, nor always sympathize with his methods, but this does not make it necessary to criticise and condemn him. So in regard to the Chicago physician whose views concerning defective infants have occasioned such widespread discussion; we disagree with his views and disapprove of his public discussion of the problems involved. But this does not call for a bitter attack on the man and his motives, and we trust no such construction will be placed on anything we may say on the question at issue.

What to do with the new-born defective is a question that has been widely debated during the past month. One side has held that it is the attending physician's duty to terminate the existence of every defective that seems liable to be a burden to society; the other side has maintained no less strenuously that the physician has no

choice in the matter and is obligated in every instance to exercise every effort to save and prolong the life of the new-born child, no matter how badly deformed or defective it may be.

Frankly, this question is not debatable, for it has no answer or solution. The constant error made by those who have given it consideration has been in looking upon it as a general problem to be solved by following a definite and uniform course of action. A little thought will show how impractical all this is. The problem of the new-born defective is an individual one in every instance, its solution depending entirely on the individual equation presented by the conditions peculiar to each case. In other words, each case must be considered separately and distinctly with the object of determining the best and most satisfactory solution of the particular problem presented. Medical men have always done this and are constantly meeting all kinds of cases, from those with the simplest deformities to those in which the physical defects are so extensive that no line of treatment offers the slightest prospect of their survival. In every case of this character the attending physician realizes that the responsibility rests on him and that he must decide according to his conscience and best judgment what shall be done. Fortunately Nature usually takes care of the worst cases and those with imperforate anus, spina bifida or other major defects rarely fail to terminate fatally. Little is left to the physician. At best, the most any treatment of his can accomplish is to delay the fatal result. The question he is usually called upon to decide, then, in connection with the severe cases, is as to the advisability of performing an operation that will be only temporary in effect. If there is the least doubt as to

this, however, that is, if he has the slightest reason to believe, owing to the conditions present, that an operation will do more than to prolong the infant's life, *he has no choice in the matter, there is only one course for him to follow.* A new element has entered the problem, the possibility of saving life. When this confronts the physician his duty is plain; the mere recognition of the possibility of saving life establishes his obligation.

The physician's duty is to save life, never to terminate it. The idea that the attending physician should kill all defective children at the time of birth that bid fair to be hopelessly handicapped in later life and possible burdens on their families or society is contrary to every principle of medicine or humanity. To begin with, it assumes a right which even if proper to exercise—a premise by no means established—calls for a degree of foresight and prognostic ability that no physician can rightfully claim today. The chances for mistake are greater than most conscientious men care to take. Finally, the adoption of the suggestion would pave the way for abuses and the development of evils so much worse than those arising under our present custom of letting Nature take its course, that sooner or later mankind would find them intolerable.

No, the whole proposition is abhorrent as soon as one considers the question in its broad general application instead of in its relation to some specific case. It is true that individual instances may occur when the maintenance of life seems a mistake, a needless perpetuation of distress and suffering. Nature, however, usually solves these problems herself, but in the few instances in which she fails, better by far that

the physician should be a party to the mistake of saving a few helpless defectives than to the crime of hastily destroying innumerable lives with their unknown possibilities.

It seems, then, to be the consensus of medical opinion that each case of serious congenital defect is an individual problem which the attending physician must solve according to the dictates of his judgment and conscience. If operative treatment seems futile—or simply offers the temporary prolongation of life—it is his right, nay, often his duty, to refuse to perform it. In no way can he be held responsible for the subsequent death of such a child. If operation, however, offers the slightest prospect of saving the child's life, he is duty bound to perform it. He may thus be responsible for saving a few helpless defectives, but there are few physicians who would not rather carry this responsibility than to assume that of blotting out a single human life with its unknown possibilities. We say "unknown possibilities," for it is a fact that no one can foretell the future of a defective infant whose condition permits of a fairly normal physical existence. Every physician of experience has seen cases apparently hopeless that suddenly have undergone the most remarkable change and been restored to a practically normal condition. The things we are learning every day in regard to the internal secretions, especially their latency and responsiveness to various activating influences, lead us to expect such results much more frequently, and thus rob many of these cases of their seeming hopelessness.

Some one has said that "the miracles of today are the commonplaces of tomorrow." It is in this rapidly changing order—the development of knowledge and the ability to cope successfully day by day with more

and more of the conditions that have seemed beyond our powers—that we find the best possible answer to the demand that medical men should destroy every hopeless defective. We believe we express the universal sentiment when we say the medical profession has no intention of taking any such course.

Tomorrow there may be no hopeless defectives!

Patient or "Case?"—"I am a *human being*, not only a *case*!" exclaimed a little woman in a New York hospital recently, thus arresting and impressing the attention of the young physician in attendance, who adjusted his thinking cap and set about comparing notes with his confreres, some of whom, he discovered, had met with similar experiences and found it necessary—as well as helpful and profitable—to take into consideration the human element in its relation to what they routinely had considered merely "*cases*."

In the amphitheater and in the laboratory we acquire the science of medicine, but in the school of experience alone, do we learn its art; that is, in its practical application to individuals, which is a very different matter from the study of cases without regard to temperamental differences and personal idiosyncrasies. Sooner or later, every physician discovers that these two important factors make every case different in reality from every other case—each, in brief, a "law unto itself." The human element immediately becomes the essential fact to be thoroughly studied and understood if success is to be achieved—success arising from the actual results obtained by medical skill, the genuine art of medicine. That these matters should receive more attention in the training of young physicians goes without

saying, especially in regard to individualization in treatment—the exaltation of the “patient” above the “case.”

Another phase of medical practice recently called to our attention, touches the fallibility of the physician. A certain class of patients, in the lower social scale, as a rule, believe that it is possible for the physician to control a period of illness at will, no matter how severe the attack may be, or at what stage of the malady the physician is called. To such patients it seems only a financial question; how much will satisfy the doctor or how much the physician believes the ill man is able to pay!

Here is a field for missionary work. To combat such crude ideas, much patience, great tact and a wide knowledge of human nature are required. These conceptions, however, may be due to the fact that some glimmerings of the possibilities of prophylactic medicine are sifting through to the comprehension of the lower classes. This probability in itself is gratifying and will compensate somewhat for the false estimation placed on the honor and humanity of the profession. Medical men, nevertheless, owe it to themselves to correct as much as possible these erroneous views, for they are not only wrong, absolutely wrong, but they are unfair and unjust to men whose daily work is a constant refutation of the idea that they are actuated by sordid aims and motives.

Narcotic drug addiction is one of the gravest and most important questions confronting the medical profession today. Instead of improving conditions the laws recently passed have made the problem more complex. Honest medical men have found such handicaps and dangers to themselves

and their reputations in these laws, and the regulations evolved to facilitate their enforcement, that they have simply decided to have as little to do as possible with drug addicts or their needs. That this is wrong and not in accord with the highest principles of medicine must be conceded, and yet we sympathize deeply with our colleagues who have taken this course. The prospects of annoyance and suspicion, with the danger of making honest mistakes or of having methods misunderstood and misconstrued are too great—as shown by the unhappy experiences of more than one physician of standing—to make it attractive to the average doctor to devote his time and attention to the problems of drug addiction and a class of patients that are generally looked down upon. Consequently there are few medical men who will treat or have anything to do with the drug addict. The druggists are in the same position and for similar reasons many of them have discontinued entirely the sale of narcotic drugs. The poor drug addict is in a precarious condition indeed, for he is denied the medical care he urgently needs, open, above-board sources from which he formerly obtained his drug supply are closed to him, and he is driven to the underworld where he can get his drug, but of course, surreptitiously and in violation of the law. Through no fault of his—except that he is the victim of a drug habit—he is forced to become a law breaker. Someone may say this is unnecessary and he can go to the authorities. This is true; he can. But he knows that he will get no sympathy from the police, for they will only look upon him and treat him as a “dope-fiend.” He knows only too well what that treatment will be and the hell he will be forced to undergo through the lack of a correct knowledge of what drug addiction really is,

on the part of the authorities. Is it any wonder he prefers to continue as he is?

Abuses in the sale of narcotic drugs are increasing, and the questionable methods are by no means limited to those who are apparently faithfully conforming to the law. Physicians doing a reputable, honorable business are finding it harder and harder to purchase narcotic drugs. Some of our large wholesalers have shown a very arbitrary manner to their medical customers, going so far as to restrict the quantity they would sell at any one time, and in one instance, even refusing to sell any amount whatsoever, although the order was in proper form and in accordance with the law in every way. In fairness it may be said that this firm had been warned by the police that the doctor seeking the purchase was under suspicion. But as long as he was in active practice and his papers in proper order, his rights as a practicing physician, to say nothing of the needs of his patients, should have been respected by the firm in question.

A particular sinister sequence of the inability of drug addicts to get supplies of their drugs through legitimate channels—physicians and druggists—is the character of the places to which they are forced to go to get their drugs and the type of people with whom they are obliged to mix. The most depraved criminals are often the dispensers of these habit-forming drugs. The moral dangers, as well as the effect on the self-respect of the addict, call for no comment. One has only to think of the stress under which the addict lives, and to recall his lack of funds, to realize the extent to which these poor afflicted individuals are under the control of the worst elements of society. In respect to female habitues the

conditions are worse, if possible. Houses of ill fame are usually their sources of supply, and one has only to think of what repeated visitations to such places mean to countless good women and girls—unblemished in most instances except for an unfortunate addiction to some narcotic drug—to appreciate the terrible menace.

In view of what the drug addicts of this country—in the large cities particularly—are undergoing, and the many problems presented of a moral, civic, medical and humanitarian character, can the medical profession continue much longer to neglect a situation that in addition to its very evident duty, also offers unparalleled opportunities for splendid service?

The management of drug addiction is not a police or a penological problem. On the contrary it is a medical problem purely and exclusively. The drug addict is sick, with a pathology as definite as that of any other toxic disorder. This is the great fundamental fact concerning drug addiction and when the medical profession realizes it, the solution of the drug addiction problem will be over half solved.

Unfortunately, the afflictions of the drug addict have made him a shining mark for unscrupulous individuals and the dishonest and underhanded methods to which he has been subjected have been encountered not infrequently where least suspected. Some day the whole sordid story of "The Exploitation of the Drug Addict" will be written, and a good many things will then be known that are not known now. It will make interesting reading, and be a revelation in the ways and means of unscrupulous drug habit specialists, and "the gentle art of fleecing patients" or "the painless removal of the last dollar."

A noteworthy paper on drug addiction appears in this issue and we count ourselves very fortunate in being able to present it to our readers. We refer to the article by Dr. E. S. Bishop. Quietly and modestly this earnest physician has been investigating drug addiction, studying it from every angle, until at last he stands one of the few medical men in the civilized world who can speak with authority concerning its pathology and scientific treatment. Dr. Bishop's experience in Bellevue Hospital followed by his years of service as attending physician at the New York City Workhouse have assured him a wealth of material, but this would have been of little value but for his interest in drug addiction as a great human problem and his earnest desire to effect its solution if possible for the benefit of mankind. For quite a while rumors were current in medical circles that a New York physician was accomplishing remarkable results in the treatment of drug addiction. Gradually these increased until at last it became generally known that Dr. E. S. Bishop was doing some exceptionally effective work in restoring drug addicts to health and a normal existence. Dr. Bishop's workhouse service has been particularly interesting to many of the city's officials, for they have known the type of the majority of the cases he has had to treat. In spite of this the results have been exceedingly gratifying, and have proven more firmly than ever that his methods of treating drug addiction constitute a very real and substantial achievement.

It is not our intention to be extravagant in our references to Dr. Bishop's studies of drug habituation. He has been so modest himself and has avoided publicity so carefully that we would not under any condition say a word to embarrass him or cause him

the slightest annoyance. But AMERICAN MEDICINE aims to commend deserving medical work whenever the opportunity arises, and especially seeks to bestow merited praise on men while they are alive instead of postponing it until they are dead, as is too often the custom. In connection with Dr. Bishop's work a combination of reasons have united to induce us to discuss it as we have. Thus the general attitude of the profession to drug habits, the widespread sentiment that drug addicts are a class to be tabooed, the growing importance of the problem, the lack of accurate knowledge on the subject, and the hopeless state of these patients if the medical profession continues to neglect them, all combine to make the question one of the most important that this or any other purposeful journal can discuss.

Then add to the foregoing appreciation of the man who has not only had the courage and humanity to devote himself to the study of a tabooed subject, but the ability and character to apply himself—in spite of every obstacle, the absence of adequate reward or remuneration and a full realization of the annoyances and dangers certain to be encountered—until its mastery was assured, and we believe we have justified the thought and space we have given to the question.

In concluding these rather fragmentary remarks, we do not hesitate to state that we earnestly hope some of those who read them may be induced to take up the study of drug addiction. In forthcoming numbers we shall have additional papers by Dr. Bishop on this all important subject, as well as from others who can also speak with authority.

Fear is one of the basic instincts of animal life. Darwin states that it is the

most depressing of all emotions, and that it soon induces utter, helpless prostration. It is true, however, that the present generation, unlike our arboreal ancestors have less in our environment to invoke the sense of fear. And yet unquestionably the instinct of self-preservation is rooted deep in our minds. Fear is a constant detail of life. We can easily comprehend the effects of fear, or the instinct of self-preservation upon early man; how it influenced character, evolved communal interests; developed courage to question the rights of others when opposed to one's own and thus created leadership; fear of the unknown, a lack of an elementary hypothesis of cause and effect as to man's relation to the forces at work for good or evil to him and his; the hurricane, volcano, fire and flood, heat and cold, all incited fear; he could not understand them, nor comprehend their place in his cosmos. The visible manifestations of these unknown and incomprehensible powers naturally instilled in him great fear. Compelled to battle alone with these unknown forces, with no possible hope of other than a temporary respite and viewing destruction, dissolution everywhere, it is not at all surprising that the instinct of self-preservation dominated his every thought and act.

As civilization developed, a growing knowledge of the forces of Nature came as superstitions; gradually science has unravelled these mysteries, and man has become more self-reliant and courageous; to a notable degree he has succeeded in harnessing these hitherto uncontrollable forces and made them subordinate to his will.

The elemental forces of Nature no longer gave rise to fear, but man found his struggle growing more complex in that he was confronted by the baffling forces of heredity

and disease. Thus the same ancestral fear persists and the instinct of self-preservation still dominates; the causes alone are different. We have succeeded to a greater or less degree in safeguarding against fire and flood, heat and cold. We sail the seas with comparative safety; have harnessed electricity and steam and are largely masters of time. Mechanical devices have solved many of the problems of manufacture; scientific agricultural methods have removed to a large extent the grave doubts of the past as to the world's ability to feed its inhabitants. And so many of the old causes of fear have disappeared.

Disease, however, is the most universal cause of fear today. To this fear and the instinct of self-preservation we owe our knowledge of hygiene and prophylaxis, and probably much of our ideas of treatment.

The influence of fear upon health is not discussed in the text books, nor is its far reaching effects upon health ever considered in the general management of the sick, except in the most cursory manner. It is safe to say, however, that few mental states add more to the burden of the physician, or make his problems more difficult.

That fear is a potent factor in producing abnormal conditions or at least in accentuating the baneful effects of disease is a fact established beyond controversy; and yet in spite of its harmful tendencies, fear in some respects is a beneficent force, beneficent in that had we not been possessed of fear, self-preservation would not be the moving impulse it ever has been and is today in our life; without fear the human race would probably have perished. Courage and fear are antithetical; courage incites to extinc-

tion, fear to self-preservation. We believe courage rarely if ever exists without fear; such a mental condition, alone and unchecked by the caution naturally engendered by fear would have prevented the survival of mankind as well as all other forms of animal life.

A morbid fear of disease contributes largely to an unbalanced mentality; it disarranges the bodily functions to be later followed by organic dissolution. "The psychopathic believes himself afflicted with some incurable physical malady, such as cardiac trouble or tuberculosis; the psychoneurotic, that he is on the verge of insanity." Sidis writes that the main source of psychopathic diseases is the instinct of fear with its baneful manifestations of anxiety, anguish and worry. Darwin writes that "if we expect to suffer we are anxious." James regards "anxiety as morbid fear." Bain the "anxious condition of mind, a sort of diffused terror." In other words concludes Sidis "anxiety is nothing else but the working of the instinct of fear. Religious, social and moral lapses and superstitions associated with apprehension of threatening impending evil, based on the fear instinct, form the germs of psychopathic affections."

Death from fear is very rare but the following very interesting, although painfully unfortunate incident in a noted New York surgeon's experience, the late Dr. Robert H. M. Dawbarn, was recently related to us:

"Some fifteen years since, a patient, young and apparently vigorous and sound man, was referred to me at one of our city hospitals for operation in a perfectly simple case of hemorrhoids. Due preparations for the procedure were made, and he was left to wait his turn in the number of cases detailed

for that morning's routine work, in a private room. The case, however, did not come to operation; in fact not even to anesthesia.

As the nurses passed the door of his room during our work on cases which were scheduled to precede his, he would call each into his room and inquire with increasing earnestness and obvious expression of anxiety whether in their opinion the approaching operation might not endanger his life. Finally a nurse reported to us that in spite of their efforts to reassure the patient that the operation was absolutely a safe one, he had grown almost incoherent with fear or fright; she thought that I had better see him. I had been scrubbing up in an adjacent room, but went to him at once and found him at that moment dead. Careful attempts at resuscitation were at once instituted and persisted in, but without avail.

It developed that the young man carried several life insurance policies. Because of the anomalous condition as to the diagnosis of cause of death, representatives of these companies were at the autopsy which was thoroughly and properly made in our presence by a careful specialist. Not a gross lesion was found."

The final diagnosis was "death from fear."

The Ordeal of the Operating Room.—

Dr. Carr, (*Va. Med. Semi-Monthly*) says: The too frequent custom of carrying a patient to the operating room half an hour or more before the time and leaving him there practically unnoticed while preparations are being made, cannot be too severely condemned. It is the most trying part of the ordeal. And a surgical operation is an ordeal to the average patient.



The death of Edward Livingston Trudeau removes from our midst one of the world's greatest heroes. This may seem



like extravagant praise but when one stops to think of the courage and optimism of this man and the faithful work performed for over forty years while constantly battling with a ruthless foe, there are hardly any words of commendation that will not be considered appropriate and deserved. Most sufferers from tuber-

erculosis find that their own struggle against a disease so relentless and persistent, leaves them little time or inclination to consider the problems of others. But Trudeau fought his personal battle and at the same time helped countless others similarly afflicted to conduct their conflicts. Is it any wonder that we speak of such a man as a hero? To us there is no finer life or career than that of Trudeau. When others would have given up, he began his life work; where others would have seen death and defeat, he saw life and opportunity; when others would have succumbed to overpowering odds, he commenced to fight. Nothing dismayed him or could make him falter in the campaign he had laid down to follow. Indomitable courage, an unconquerable spirit and a character that rang true, gave to Trudeau the power to fight on when other men would have been crushed and beaten. His life, as a consequence, has been a full one, and in spite of his handicap, can show a wealth of achievement that places him in front rank of the world's great men. Grief and the deepest regret are felt at Dr. Trudeau's unexpected death, for though he was known to be fighting constantly to keep back the disease that he had fought—and successfully—from early manhood, it was hoped that he still had a goodly number of

years ahead of him. But a man like Trudeau never dies. His physical existence comes to a close, but in the things he stood for, the things he accomplished and the great influence he has had in the sphere of his activities, he will live on long after we who knew and loved him have passed away.

The following story of his early life and later achievements (*N. Y. Times*, Nov. 15, 1915), is so full of human interest that we feel we cannot do better than to give it to our readers:

"Edward Livingston Trudeau was born in New York City in 1848. The doctor's mother was the daughter of a New York physician of French birth, Dr. Eloi Francois Berger. His father James Trudeau died of wounds received while commanding Island No. 10 in the Mississippi during the civil war. Mrs. Trudeau then lived with her father in New York. When the youngest of her three children, Edward L. Trudeau, was only 3 years old the family went to Paris, where the boy was educated. He returned to New York City when he was 18 and hardly able to speak a word of the language of his native city. He planned to enter Annapolis after graduating from Columbia, but an elder brother who had preceded him to the Naval Academy was stricken with tuberculosis. Young Edward nursed him and contracted the disease, of which his brother shortly died. Thus he came in contact with the scourge to the extermination of which he determined to devote the rest of his life.

He entered the College of Physicians and Surgeons of New York City, was graduated in 1871, and in the same year entered into partnership practice with Dr. Fessenden Otis in New York. In the same year he married Miss Charlotte Beare of Douglaston, L. I., who has been his mainstay throughout many a period of discouragement, for their life together was marked by many a tragedy, the death of all their children save one, Dr. Francis B. Trudeau, who with Mrs. Trudeau, survives. Dr. Edward L. Trudeau, Jr., died in 1906.

The first tragedy—which was fortunate for the world—was when Dr. Trudeau was pronounced a hopeless case of tuberculosis. He was 26 years old and the physicians gave him six months to live.

On the advice of the famous Dr. Alfred L. Loomis he went to Paul Smith's in the

Adirondacks in 1873, accompanied by his friend Lewis Livingston of New York. Paul Smith's was then a hunter's clearing house forty miles from the nearest railway station at Ausable Forks. When Trudeau was brought to Paul Smith's he was carried upstairs and put to bed by a guide who said he "weighed about as much as a sheepskin." At Smith's Trudeau improved, thanks to the tender nursing of Livingston, Paul Smith and the late E. H. Harriman, who was then staying at the wilderness inn. Harriman became his life-long friend, pouring money into his lap for his altruistic work.

In 1877 he moved to Saranac Lake, a hamlet with a saw mill and six houses. His patients came to him there and New York doctors began to send tubercular cases to him as a last hope.

It was in 1885 that he built the "Little Red" shack on Mount Pisgah, near Saranac Lake. This was the nucleus, costing \$350, of the great Adirondack Cottage Sanitarium which has wielded such a widespread influence. The present sanitarium is a million-dollar institution run on a semi-charitable basis and at a deficit of from \$10,000 to \$20,000 a year. Trudeau never accepted a penny for salary as director.

Dr. Trudeau was one of the first scientific workers in this country to obtain the tubercle bacillus in pure cultures after Koch's announcement of its discovery in 1882. Trudeau also repeated all Koch's inoculation experiments despite the fact that he had no books, no apparatus, and, as he confessed himself, "an indifferent medical education." He had to keep his guinea pigs in a hole in the ground and warmed it with a kerosene lamp to prevent their freezing in the Adirondack winter nights. He grew his tubercle bacilli in a home-made thermostat heated by a kerosene lamp, which exploded one night while he was in New York City and ill and burned his house, cultures, records, guinea pigs, and everything to the ground. The blow was a terrible one to the aspiring young physician, but he took heart from a letter which Sir William Osler sent him.

"Dear Trudeau," wrote Osler, "I am sorry to hear of your misfortune, but, take my word for it, there is nothing like a fire to make a man do the phoenix trick."

Trudeau did it. Almost upon the ashes

of his crude laboratory presently arose the first and perhaps best-equipped laboratory for medical research in America. George C. Cooper of New York came forward with the necessary capital.

Trudeau was highly honored for his labors during his lifetime. He received, among other degrees, the LL. D. of both McGill and the University of Pennsylvania, Master of Science of Columbia, and Honorary Fellow of the Phipps Institute. In 1910 he was President of the Eighth Congress of Physicians and Surgeons at Washington, D. C. Hardly able to stand on his feet, he addressed his colleagues on "The Value of Optimism in Medicine." It was his last great public utterance. His voice hardly audible because he was suffering intensely as he spoke, he concluded thus:

"So let us not quench the faith nor turn from the vision which we carry, whether we own it or not; and thus inspired, many will reach the goal."

Truly the profession have reason to feel proud of the life and work of Edwin L. Trudeau as one who "kept the faith."

It is a matter of considerable pride to those in charge of AMERICAN MEDICINE that the article by Dr. Trudeau in our January issue was one of the last ever prepared by this great American physician.

Should Hospitals Advertise?—Quite a discussion is likely to be started by the action of a great city hospital in considering the question of newspaper publicity and carrying out an aggressive promotion campaign to fill its private rooms with patients. No less an institution than the Toronto General Hospital has inaugurated what may possibly be an epoch-making campaign, and in a recent issue of *Printer's Ink* (October 21, 1915, page 79) a report from their Toronto correspondent tells of the fundamental idea which has actuated the hospital authorities and their experience to date. This writer believes that the work of the Toronto General Hospital should be brought to the attention of other business and professional men connected with hospitals, for the work that it is attempting to do, while at once bettering the community's way of living—possibly even saving life—at the same time will lift the hospital out of the beggar

class and put it on a self-supporting basis. To use the words of a leading Toronto authority, "It is a hospital's duty to the community to point out publicly what it is and why it is."

This brings up a very important problem, which will not be entirely settled by the action of the managers of the Toronto General Hospital. It is perfectly true that a certain amount of proper publicity is necessary and perhaps advisable, but it is also quite possible that many physicians will question the advisability of this form of publicity especially when it is remembered that from certain ethical standpoints, in the relations of the hospital management to the patient as well as to the profession, they can not act quite, at least, as the advertiser of a commodity does when he stimulates its sale over a counter.

The facts of the case are that when you buy a package of coffee as a result of reading an advertisement in a publication, you are privileged to go to such a grocer as you care to select, pay your money, and take away your coffee. The subject of ethics is not considered, and you are not treading on anybody's toes by going to Smith's instead of Brown's or allowing some special clerk in either of these imaginary stores to serve you.

Quoting from the article in *Printer's Ink*, it will be seen that there is one important point of difficulty: "Framing the whole story in a nut shell, by this advertising, the people of Toronto can be made to feel that the next time they are sick or run-down, they must go to the hospital. Think what that means to the sick person—proper medical attention, less danger from complications, the right kind of food, quiet and comfort, and a speedy recovery. Think what that means to the hospital—a full treasury, the wherewithal to purchase the latest and most up-to-date equipment, less begging.

It seems impossible to believe that any individual in "the liveliest city in the Dominion" as we have heard Toronto called, could go to the Toronto General Hospital and be under the direct care and treatment of his regular family physician, unless by coincidence his physician happened to be upon the staff of this hospital. It may well be that advertising by hospitals and institutions of this character will receive a new impetus as a result of the aggressive policy of the board of directors of the Toronto Hospital.

The Study of Heredity.—That the data on heredity in man are often unsatisfactory is well known to those who have given the subject any careful study or thought. The reasons for this lack of trustworthy information are many, as was pointed out recently by Professor Hickson at a meeting of the Manchester Pathological Society. These reasons seem to be that civilized man presents many difficulties for investigation. He differs from all other animals in the extraordinary length of his period of juvenility; reaching physical maturity at about 15 years of age, and mental maturity much later. Man appears to require for his proper development a long period, during which he, obviously, is subject to the influences of his environment; thus he is much more a creature of environment than are other animals. For this reason it is difficult to distinguish between innate and acquired characters. Another difficulty is that man is a very slow breeding animal; it is thus almost impossible to get a sufficiently large number of cases of transmission of a particular character. Few statistics include man more than three or four generations, or from 100 to 150 individuals. In investigations of certain vegetable and the lower order of animal life, peas or mice for instance, biologists are not satisfied with less than several thousand individual specimens. There is a third difficulty, not peculiar to man, the possibility of transmission of character by the placental blood. Such characters are of course not innate. This term can only be applied to characters transmitted through the germ cell. For these reasons we are always sceptical of statistics bearing on the transmission of acquired characters. It is very doubtful if a hard and fast line can be drawn between fluctuations and mutations. There are, undoubtedly, mutations which are transmitted without blending, but there are others in which there appear to be only a difficulty of blending. In the case of an extra digit, for example, blending could only mean the production of an extra half digit. Now, experiments on poultry have seemed to show that the transmission of an extra toe obeyed Mendelian laws, but on analysis of the figures it appears that many of the extra toes are only half toes, which can equally well be interpreted as blending. The study of these questions is intensely interesting, but it is evident too great caution cannot be exercised in forming conclusions.



SOME FUNDAMENTAL CONSIDERATIONS OF THE PROBLEM OF NARCOTIC DRUG ADDICTION.¹

BY

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At the outset let me say distinctly that I do not specialize in the treatment of narcotic drug addiction. I am an internist, a medical practitioner who for a number of years has been interested in narcotic drug addiction because it offered interesting and important disease problems worthy of serious clinical consideration among other morbid bodily processes. I am associated with no hospital or institution which is devoted to the care of these cases and which reaps any pecuniary benefit from such activity. I am the exponent, or mouthpiece, or backer of no specific treatment. I am advancing no special method. I have no axe to grind. A very small part of my private practice is occupied with the care of the narcotic addict. And that part as a rule has been without financial recompense, and often carried on at my personal expense.

It is peculiarly fitting that a man in the position above outlined shall address to the medical editors the statements which I am about to make. This fitness consists especially in the fact that in being a medical practitioner and not a "drug specialist" I am a representative of, and belong to that class of our profession in whose hands lies the solution of the narcotic drug problem and salvation of the narcotic drug addict.

The neurologist, the alienist, the penologist, the lawmaker, the moralist and the sociologist have worked in the field of narcotic addiction in the lines of their special interests and in the lights of their special experiences. Each has reported results as he saw them and advised remedies in accordance with his understanding. With very few exceptions we have heard nothing as yet from the domain of clinical medicine and from the observations of the internist. It is only here and there that the practitioner of internal medicine has been inspired by scientific interest to seriously consider narcotic drug addiction and to make clinical study of its actual physical manifestations and phenomena. Dr. George E. Pettey, of Memphis, stated recently that my work entitled me to "the credit of being one of three men who during the past thirty-five years have made material contributions to the study of narcotic addiction." Another of the three is Doctor Pettey himself, a most notable pioneer in this field; and the third is Doctor Oscar Jennings, of Paris, France. Doctor Pettey's statement of three men in

¹ Read before the 46th Annual Meeting of the American Medical Editors' Association, 1915.

thirty-five years who have made material contributions to the study of narcotic addiction tells its own story.

That narcotic drug addiction should be accorded a basis of weakness of will,—neurotic or otherwise—inherent or acquired—and should be classed as a morbid appetite, a vice, a depraved indulgence, a habit, has been generally unquestioned dogma for many years. It is very unfortunate that we have paid so little attention to material facts and have made so little effort to explain evident and constant physical symptomatology on the basis of physical cause, and that there has not been a wider recognition and more general application of the work which has been done.

In spite of generations of attempt at handling the narcotic addict on the basis of inferiority and neurotic tendencies, and of weakness of will and perverted appetite—in spite of exhortation, investigation, law-making and criminal prosecution, in spite of the various cures and treatments—narcotic addiction has increased and spread in our country until it has become a menace demanding stringent legislation and desperate attempts at police control. In spite of the money which has been spent in custodial care and sociological investigation on erroneous theory and in various legislation, we have made but little progress in the real remedy of conditions.

I believe it to be a fact that in spite of all the work which has been done, in spite of all the efforts which have been made, there has been practically no change in the general situation and there has been no solution of the drug problem. In analyzing results of efforts and arriving at causes for failure, it seems to me that it is always wise to begin at the beginning, and to ask ourselves whether we have not started out with

an entirely erroneous conception of our problem. Is it not possible that instead of punishing a supposedly vicious man, instead of restraining and mentally training a supposedly inherent neuropath and psychopath, we should have been treating an actually sick man? Is it not possible that the addict did not want his drug because he enjoyed it but because his body required it? This is not only possible—it is fact—and the whole secret of our failure has been the misconception of our problem based on our lack of understanding of the narcotic drug addict.

In my own case I know that non-appreciation of this fact was the cause of my early failures; and I further know that from the beginning of appreciation of this fact dates whatever progress I have made and whatever success I have attained. In my early efforts as resident physician to the alcoholic and prison wards of Bellevue Hospital, devoid of previous experience in the treatment of narcotic addiction, directed by my available literature and by the teachings of those in my immediate reach I followed the accepted methods. I tried the methods of the alienist; I tried the exhortation of the moralist; I tried sudden deprivation of drug; I tried rapid withdrawal of drug; I tried slow reduction of drug; I tried one or two of the so-called "treatments" and "cures." In other words I exhausted the methods of treatment of narcotic drug addiction of which I knew. My results were one or two possible cures, but as a whole suffering and agony without relief, and in a few cases death; in a word failure. The blame I placed not where it belonged—on the shoulders of my medical inefficiency and lack of appreciation and knowledge of the disease I was treating—but upon what I supposed was my patient's

lack of cooperation and unwillingness to forego the joys of his indulgence. In discouragement and despair I held the addict to be a degenerate, a deteriorated wretch, unworthy of help, incurable and hopeless. Strange as it seems to me now, possessing as I did good training in clinical observation and being especially interested in clinical medicine, in calm reliance upon the correctness of the theories I followed, I ignored obvious disease.

As a result of greater experience I came to realize while still resident physician to the alcoholic and prison wards of Bellevue hospital that I had an entirely erroneous conception of my problem and a false picture of, and an unjust attitude toward, my patients. I began to realize that the narcotic addict in an overwhelming majority of cases obtained no enjoyment from the use of his drug, and that he cooperated, as a rule, to the extent of his ability and endurance in efforts to relieve him of his condition, so long as he had any hope of possible success in the efforts. I learned, educated and trained physician though I was, having recourse to the widely recognized and leading authorities in the treatment of this class of cases, that I was far more ignorant of narcotic drug addiction than the patient I was trying to treat. I learned also that the man who recognized my ignorance above all others was my patient. I came to see that what I had interpreted as lack of cooperation was largely due to memory of his previous experience and to his recognition of my ignorance and his assured expectation of useless and harmful agony which he would suffer in my care. Looking back over that period I must confess that my efforts though honestly made, amply realized his expectations. I began to see that I knew nothing of this disease or how to

treat it. I saw that addict after addict sneezed and trembled, jerked and sweated, vomited and purged, became pallid and collapsed, had the unquestionable facies of intense physical agony and the many constant and obvious signs of physical need for a narcotic drug. I could not escape the conclusion that here were tangible, material, incontrovertible facts which had never been explained. It seemed unreasonable to be satisfied with any explanation of them that did not have a physical basis; and it seemed a logical conclusion that the establishment of a basis of physical disease mechanism could offer the only hope of remedy. I therefore discarded completely the teachings of authority and I looked to the patient himself, questioning him as to his experiences and studying the symptomatology and phenomena which he presented. In short I adopted the attitude which we must all adopt before the problem of narcotic drug addiction will be solved—I became the clinical student and practitioner of internal medicine, staying by the bedside of my patient and studying his case.

From this time dates whatever progress I have made in the treatment of narcotic drug addiction, until today I can honestly stand before you and declare it my conviction as a man who is not capitalizing or exploiting his knowledge, that underlying narcotic drug addiction is a definite, understandable, analyzable, physical disease mechanism. I can further declare my strong conviction after years of discouraging and unaided labor, that I know of no disease symptomatology which is capable of more complete eradication, of more absolute cure than that which is caused by the physical mechanism which produces the untold agonies of narcotic drug addiction. And I am glad that I can stand before you as I

do as a representative of the great class of practitioners of internal medicine, and that I can tell you as I do, that not in custodial care and restraint, that not in lawmaking, punishment, moralising and exhortation, that not in the discovery of any wonderful panacea, or special treatment, method or specific—however spectacularly proclaimed and however influentially supported—lies the salvation of the narcotic drug addict and the solution of the problem of narcotic drug addiction. The solution of the problem of narcotic drug addiction and the consummation of the addict's long and hopelessly rendered prayer for cure and help lies in the education of the medical practitioners of this country. Until the medical practitioners of this country know that the addict to narcotic drugs is not a victim of appetite, is not essentially a panderer to sensuous enjoyment—until they know that the narcotic addict is primarily and fundamentally a man who is ill of a definite and curable disease condition, and until they realize the importance of the study and understanding of this condition and become clinically conversant with the pathology, symptomatology and rational therapeutics of this disease—there is little hope for the solution of our narcotic drug problem. The help of the narcotic addict lies not in any one method. It lies not in the establishment of hospitals and institutions privately conducted for the exploitation of methods. It lies in the education of the general practitioner in the fundamentals of a definite disease, and it lies in the as rapid as possible eradication of old fallacy and false conception from his mind.

I tell you, gentlemen, I realize that what I am speaking is the almost unsupported word of one man of the present against the hosts

of the past. I realize that what I am telling you is medical heresy. For a considerable period of time I have, in common with a small number of others—who have endeavored along the same lines to study and treat the addict as a worthy problem of clinical internal medicine, met with the reward of the heretic. My personal gratification lies in this fact—that I know that I can treat the narcotic drug addict in the majority of cases purely on the basis of what I know of his disease, and can restore him to health and self-supporting competency. I know that with the disappearance of certain definite, understandable and clinically demonstrable symptomatology, passes away from him so-called "habit" and "craving." Furthermore I know, and this knowledge constitutes today the best recompense I have for past efforts and the best assurance of accomplishment, that by lectures and by clinical instruction I am sending men out—ordinary everyday practitioners of medicine—and that these men are reporting to me their success in the handling of narcotic drug addicts without restraint, without specific remedies, without special methods, without routine medication, simply on the basis of an understanding of disease fundamentals and the application of rational therapeutics.

My work and experience with narcotic drug addiction has taught me one thing if it has done nothing else—I know that its problems will never be solved by any special remedies. I know that they will never be solved by the adoption of any routine method. In no other disease would any such procedure appeal to the mind of the intelligent medical man as worthy of consideration. The solution of the problem of the treatment of the narcotic addict lies simply and solely in the education of the

practitioner of internal medicine; and the education of the practitioner of internal medicine lies largely in the hands of the medical journal.

The time is at hand when lay understanding and lay appreciation of fact is forcing upon the medical profession the serious consideration and rational study of a group of diseases which have long been classed as habit, appetite and vice. The laity must come to us for advice and assistance and we must have some instruction and advice to give them which will be of more practical value than that we have hitherto offered. We must protect them from the entertaining of false hopes. We must protect them from the undertaking of useless endeavor. We must remedy false conception and undue anxiety and fear and horror. This can be done in but one way and that is by having a rational practical explanation to give them which is based on a foundation of facts which they have observed. No real help can come from, and no appreciable success can attend, the efforts of men who do not understand the disease they are treating, and who do not have a true appreciation of, and a sympathy for, the patients they are attempting to relieve. The medical profession and the laity should be taught that the narcotic drug addict is really a sick man and that whatever might have been his fundamental characteristics—ethical, mental and moral in the individual case—after addiction has once developed, the continued use by him of the drug of his addiction is a material disease fact in its causation, in its development, and in the mechanism of its continuation. The characteristics of the addict of the underworld and of the inherently incompetent man in whom narcotic addiction has been developed should no longer be allowed to determine the status of the

narcotic drug addict in general. It should be realized that the majority of narcotic drug addicts were innocent or ignorant in the primary administration of the drug and are not to be held morally responsible for the subsequent development of their addiction. The average narcotic drug addict is as normal as the average of his non-addicted fellows once he is placed in non-toxic functional and narcotic drug balance, and is relieved of worry, anxiety and fear. He is more worthy of help and more deserving of study and consideration and sympathetic effort than many of the cases of other diseases, to whom we as practitioners, and our hospitals, extend open arms and competent care.

I conceive it to be a duty of the medical journals to educate the general practitioner, and through him the laity, to the fact that the narcotic drug addict is not a man to be scorned, or blamed, or shunned—that he is a man to be pitied and sympathetically helped. I believe that from the medical profession the narcotic drug addict deserves special consideration at the present time, because to my mind it has been our failure to study his condition as a physical disease which has left us all these years in ignorance of remedy, has made him hopeless of cure and has caused him to be wrongly judged.

The practitioner should know that as to treatment the narcotic drug addict and his friends are not to be hastily advised. Incompetent treatment not only does no good but does a great deal of harm. The addict who undergoes treatment hopeful of cure and anticipating release from his pitiful condition and is subsequently discharged from treatment as "cured," with a knowledge existing in his own brain that he is cured in name only, and that he still has withdrawal

manifestations; that he cannot sleep; that he cannot work; that he cannot rest; that he does not regain his strength, is a more discouraged man than he was before entering upon his treatment. His relatives and friends regard him as cured because he has taken some well known cure. Explanations on his part that he is still in misery, that he daily and almost hourly is possessed of a need for something which his body lacks, are wasted upon his relatives and friends and often upon his physician. He has taken a cure—therefore he is cured. He has not had the drug of his addiction for some time, therefore if he relapses it is of his own free will and election and because of yearning for past solace. This is the explanation of the almost inevitable outcome. And this is the past history of the majority of my patients. Physical need for a narcotic drug will long survive mere deprivation of that drug; and the old fallacy that because a man is no longer taking a drug he no longer has drug addiction, is to be strenuously combated. I have gone into this more fully elsewhere and shall not take up time for it now. The man above described must go about his life bereft of much of the sympathy and cooperation which was extended to him before he “took the cure.” He has added to his previous experience another desperate effort and another failure. If the treatment which he took has done no real physical harm it has at least turned him from its doors a more discouraged man, and a less efficient man than he was before entering.

Of a treatment for narcotic drug addiction, however, which fails, and especially of many of those with which we are acquainted, it can by no means be said with truth that if they do no physical good they at least have accomplished no physical harm.

Many of these treatments are based upon the specific curative properties against narcotic drug addiction supposed to be possessed by the belladonna group of drugs and their derivatives. I want to emphatically state that in my opinion the belladonna group of drugs used in any manner approximating a routine specific medication, or in set dosage, are extremely dangerous. Different individuals react differently to these drugs, and the same individual shows wide variations in reaction to them under different physical conditions. Two of the most potent factors influencing the action of this group of drugs are toxemia, intestinal or otherwise and inhibition of function. As I have written before, these two factors are matters of fundamental importance in the handling of narcotic drug addiction. Any man who has not had competent clinical experience in the handling of the belladonna group of drugs and who does not comprehend and know how to control the conditions which influence their action is running a grave risk of doing his patient harm in administering them to the narcotic addict. Their routine use in the so-called “belladonna” and “hyoscine” cures has earned for them a vicious reputation among narcotic addicts. They are useful and perfectly safe intelligently administered by those who have learned their actions and appreciate their dangers, and who know how to control the conditions which influence their actions. Their use in a routine way as a specific cure in the treatment of narcotic drug addiction should be strenuously combated.

Relentless and violent purging with drastic and irritating cathartics routinely administered, illy advised and illy timed cannot help but cause, and does cause in very many cases, long standing if not permanent injury to the gastric and intestinal mucosa.

Days and nights of sleeplessness, anxiety and endurance of discomfort are tremendously exhausting to the patient; and this exhaustion results not only in making abortive attempts at cure—and prevents physical repair during treatment—but carries on long after treatment as physical sequelae and as nervous and psychical trauma. The experience of many men who have undergone unsuccessful treatment with its agonies, futile and wasted as they have been in the accomplishment of any beneficial results, persists as a horrible memory which greatly handicaps the efforts of those into whose rational care they may later come. This is a matter of personal experience in the writer's practice. A narcotic addict who has never undergone treatment, or who has abandoned unwise treatment before its harmful effects have been strongly impressed upon his mind and body, is comparatively easy to treat. The man who comes for treatment, however, with his intestinal tract in bad condition, and the history that so many give of its having been in that condition ever since his taking this or that "treatment"—whose nerves are "unstrung"—whose anticipation is largely moulded by past fear and past agonies is a difficult case to treat.

In view of the above I believe it is the duty of the medical journals to instruct the practitioner of medicine that it is far wiser for him in handling a case of morphinism for instance, to prescribe morphine in the amount of need and to teach his patient how to regulate his dosage and how to keep his body in such condition as to minimize the inhibitory effect of the drug and the harmful effects of auto and intestinal intoxication, until such time as he can recommend him to a place which, to the physician's personal knowledge, competently and

intelligently administers rational treatment—or until the physician himself has learned narcotic drug disease and its rational therapeutics. There should be nothing in the law to prevent the honest practitioner from prescribing for his patient as much narcotic drug as his patient needs to meet the indications of his disease. And it is his professional right and his professional duty to do so until he is in a position to offer his patient rational treatment directed to ultimate cure with assurance of success.

I should like to see two phrases eliminated from the literature of narcotic drug addiction. I believe they have worked great injustice to the narcotic addict and have played no small part in the making of present conditions. It seems to me that to speak and write as we do of "drug habit" and "drug fiends" is placing upon the addict a burden of responsibility which he does not deserve. If long ago we had discarded the word "habit" and substituted the word disease I believe we would have saved many people from the hell of narcotic drug addiction. I believe if it had not been for the use of the word habit that the medical profession would long ago have recognized and investigated disease. A man, physician or layman, believes that he can control a habit when he would fear the development of a disease. Until now, however, the description has been "drug habit." And the man who acquires one of the most terrible diseases to be encountered in the practice of medicine is unconscious of his having a morbid physical process until this process has become so developed and so rooted that it is beyond average human power to resist its physical demands.

I hope the true story and the real picture of the narcotic drug addict will before long become universally known. Without

familiarity with them and understanding of them, and comprehension and appreciation of their disease foundation we shall never make real progress in the solution of the narcotic drug problem. From the trend of articles and stories in the newspapers and lay magazines it cannot be doubted that the time is not far distant when in the lay press will appear, in plain, sober, unvarnished truth, the true story of the experiences and struggles of the narcotic drug addict. I have marked a rapidly growing appreciation of facts and a steadily increasing activity in the investigation of conditions on the part of the public. It is to be hoped that competent medical discussion of these matters in the medical press will precede their appearance in the lay publications. The passing of the various laws has resulted in much immediate hardship. This hardship has not affected the criminal, the degenerate and the underworld class of addicts as it has the innocent, self-supporting and generally respected addict who has often for years borne his cross unknown to his associates and friends, but whose physician in fear of the law refuses to supply him with the drug of his addiction. There are very many of these. Most of them are honest, intelligent people in all walks of life. The desperateness of their need is becoming realized among the laity and must before long swell the low murmurs of their protest into a chorus of demand which will carry with it adequate investigation and actual revelation. This investigation and the publishing of this revelation should come first through the activity of the constituted medical bodies and the medical journals.

A word should be said concerning the position of the practitioner of medicine in the light of the existence of the recently passed laws attempting to control the sale and use

of narcotic drugs. There has been to date insufficient interpretation of these laws in their application to the medical practitioner. However these laws may ultimately be interpreted, one thing is sure—as practitioners of medicine it is our duty to relieve as far as reasonably possible the suffering of our patients. The man who is addicted to a narcotic drug can have his suffering relieved in but two ways. He must either have the drug supplied to the extent of body demand or he must be relieved of the physical condition which causes that body demand. The gradual reduction of a drug of addiction below the amount of physical need has been so repeatedly demonstrated to be impracticable as a procedure of general practice that its consideration should long ago have been abandoned. In the light of understanding, and appreciation, and experience, unless carried out under conditions which are impossible for the great majority of addicts, it is harmful, barbarous and futile; and concerted medical action should be brought to bear against the introduction into our legislation of any clause requiring such procedure.

We are not facing theory in our present crisis; we are facing facts. We need intelligent comprehension and unbiased investigation far more than we need premature conclusions drawn from insufficient experience or too narrow observation along special lines. The fact is this, as I have repeatedly stated, that the narcotic addict needs the daily administration of sufficient quantities of the drug of his addiction to meet the indications of his disease. If the drug is not administered to him in sufficient amounts to meet these indications he cannot be blamed if, in the agony of his suffering and the desperateness of his plight, he is forced into the underworld and the illicit channels

of supply for the continuance of a physically endurable existence. Until the medical practitioner and the medical institutions—hospital and otherwise—have in competent execution methods of treatment of the narcotic addict which are more humane and more effective than those which are at present generally accepted and used, the supply of narcotic drug to the narcotic addict to the extent of physical need, without unjustifiable exploitation, financial or otherwise, is the duty of the medical man. Any law which to this extent limits the supply of drug to the addict should receive the support of the medical profession. Any law which renders it difficult or impossible for a physician to conscientiously and rationally meet, to this extent, the indications of narcotic drug disease, should meet from the medical profession with a united and honest attempt at its modification. Above all there should be fostered by the medical profession an intelligent, unbiased investigation into the actual facts surrounding the problem of narcotic drug addiction as a definite disease. Such information as we should give would be eagerly welcomed by the law-makers and the judiciary; and we should be in a position to cooperate with them in the making and interpreting of narcotic drug laws. Lack of such information has played an important part in whatever mistakes our police, legislative and judicial bodies have made and has forced them to proceed as best they could to meet the demand of a public menace which could no longer be denied.

The final answer to the problem of narcotic drug addiction rests with the medical profession and with the medical journals. Until we are in a position to, and do take the instruction of the public and of the laity out of the hands of laymen on this

most urgent of medical matters we shall accomplish nothing. There is urgent demand, sociological, legal, individual and medical, that the investigation, consideration and treatment of narcotic drug addiction shall be seriously fostered in the spirit of worthy clinical disease study within the field of internal medicine.

One more very important matter. It seems to me that the long standing medical reticence in the matter of information to the laity on medical subjects must be broken through in the case of narcotic drug addiction. About a year ago at a symposium of the New York Board of Health on the subject of Quacks and Quackeries, held as a meeting of the Medical Section of the Academy of Medicine, I read a paper on the "Evils of the So-called Drug Cures." In this paper I strongly urged that, as the individual practitioner cannot instruct the laity in the public press no matter how strong lay pressure is brought to bear upon him, without his being severely criticized by his professional brethren and his motives misunderstood—the medical profession through its duly authorized bodies should provide this instruction to the laity by way of the lay press. There is a crying need for the instruction of the public in matters of narcotic drugs, and this need must be met. The reticence of the ethical and legitimate medical bodies on medical matters of public interest often leaves the education of the public open to charlatans and quacks and is really the protection of charlatans and quacks in their practices.

The treatment of narcotic drug disease is in its fundamental mechanism a legitimate part of and belongs within the province of internal medicine. On its being placed there and being taught in a rational, ethical and non-spectacular manner depends

the solution of the narcotic drug problem. In the long run it is to the medical practitioner—into whose hands will ultimately come the logical and proper handling of the bulk of narcotic addicts, and whose privilege and power it is to guide and form to a large extent the lay conception of medical matters that we must look for the real solution of the narcotic drug problem and the cure of the narcotic drug addict. It is to the medical journals and to the influence of their editorial columns that we must look for the broad education of the medical practitioner in the wide field of narcotic drug addiction.

151 West 85th Street,

ON THE TRAUMATIC NEUROSES.¹

BY

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The importance of a knowledge of the surgical neuroses has greatly increased during the last few years especially in the larger cities. The great increase in rapid locomotion, the greater complexity of modern human relations and the increase in the number of those especially predisposed to nervous disorders with the increase of urban population justifies increased study of these remarkable neuroses. The much larger knowledge of these phenomena by the legal profession makes it imperative that we do not neglect them.

I have long had the feeling that the special training and the daily work of the average general surgeon unfits him to appreciate the finer things of the nervous

system, and develops in him skepticism concerning those nervous disorders that have not a basis of visible pathology. It has not been an uncommon thing in the past to hear a railway surgeon express the opinion that the traumatic neuroses amount simply to a question of the adjustment of damages.

Undoubtedly certain persons are more susceptible to injury of the nervous system than others; many have a special predisposition to the disorders that we call neuroses, yet as good an authority as Putnam states that "it is certainly true in the great majority of cases no neuropathic tendency in the usual sense, can be detected even when severe results arise from trivial accidents."

As to the classes of persons who are most frequently affected by such accidents, those with irritable, responsive, sensitive nervous systems, those with narrow experiences, restricted lives and limited resources and income and those with very little training in self control are most numerous. They are more common in persons taken suddenly and unawares and to whom a horror or calamity is apparent. They are less common among those injured while asleep or intoxicated. It is an interesting and significant fact that the traumatic neuroses seem to be relatively infrequent among those injured in the various sports and during the horrors of war. It is possible that the tension of expectation or anticipation may account for this fact. What the result of accidents due to aerial navigation will be remains to be discovered. (Since the European war began it has been stated by Bonhoffer and Wygandt that while there is no special war psychosis, latent hysteria, epilepsy, delirium, slight imbecility, manic depressive or catatonic tendencies are likely to be fanned into activity. Prompt removal

¹ Read before the American Association of Railway Surgeons, Chicago, October 15, 1914.

from the field into a zone of quiet and comfort is important both in the interest of the patient and because of the danger of the development of "mass-psychoses" or "imitation psychoses" among the troops. Among the ethologic factors in the production of these psychoses are included emotional stress, fatigue and lack of alcohol among those accustomed to its use. These factors are active even during mobilization. In battle we have in addition physical injury; air impact from the passage or bursting of a shell is sufficient to give any degree of trauma to the nervous system even to the production of instant death. The writers strongly recommend the immediate administration of morphine 0.01 to 0.02 gm. and scopolamin .0005 to .001 gm. The percentage of these cases of psychoses in war runs from about .5 to 2 per thousand).

The traumatic neuroses may for the purposes of our consideration be classed as neurasthenic and hysterical. There is some diversity of opinion as to exact classification. A few years ago we heard of traumatic neurasthenia; later it was stated that traumatic neurasthenia was characterized by frequent signs and symptoms of hysteria. Albutt who wrote the article on neurasthenia in the last edition of his *System of Medicine* states that the most notable change in opinion since Victor Horsley wrote the article in the previous edition was "the intrusion of various degrees of hysteria into the process." Another authority says "the psychic element is much more prominent in these cases than we used to think." An English authority (Knopp) after an analysis of 200 cases finds that 70 are cases of hysteria and 50 of neurasthenia.

Dercum says hysteria must be clearly differentiated from neurasthenia with which it has nothing in common; it may not have

a single fatigue symptom. Hysteria may be as clearly differentiated from psychasthenia and hypochondria which belong in the group with neurasthenia.

All authorities agree that hysteria is a purely psychic disorder and has no fixed symptoms. It is generally agreed that neurasthenia is a definite disease of mental origin with symptoms as real as those purely physical. Much of what is called hysteria in women is neurasthenia or what is still more common—the *most* common neurosis in women according to Llewellyn Barker of John Hopkins—psychasthenia. Barker says that hysteria is a relatively rare disorder.

Of the traumatic neuroses, I think, we may say that neurasthenia and hysteria are equally common and that like other definite and distinct diseases the one may be a complication of or be superimposed upon the other. Neurasthenics may show signs and symptoms of hysteria at times and cases of typical hysteria may have symptoms of neurasthenia.

The special distinguishing mark of hysteria is susceptibility to suggestion. It is further marked by lack of fixed symptoms, alterations of character, convulsive crises, paralyses, contractures, anaesthesias, amnesias, great desire for attention and notice, lack of judgment, variations in mood, and action on sudden impulse.

The special distinguishing mark of neurasthenia is fatigability. It is the fatigue neurosis, the irritable weakness. It shows weak volition and weak inhibition, physical and mental inadequacy, lack of self confidence, persistency and concentration.

Psychasthenia, often included with neurasthenia, is marked especially by fears, anxieties, obsessions, impulses rarely yielded to, sense of danger of impending occurrences, sense of incompleteness, lowered

psychologic tension and forced agitations. It shows a tendency to periodicity.

Hypochondria is marked by an all compelling fear of disease, excessive psychic distortion of sensations of disease, real delusions regarding one's physical condition as compared with true neurasthenia.

Pathology.—I hesitate to say a word about pathology in relation to the neuroses. If medicine has taught one thing positively it is not to theorize. Just a word. All the nerve cells and centers of the central nervous system are present at birth. What physiologists call the organization of the nervous system takes place later, largely before puberty but not completely before the fiftieth year of life. By organization is meant the connecting up of the various cells and centers by the development of neurones, dendrons, dendrites and dendritic processes. If we are ever to know anything of the pathology of hysteria I feel confident that it will reveal a weakly organized nervous system and in the case of traumatic neuroses a partially disorganized nervous system, especially in the higher and phylogenetically later developments of will, reason and judgment, volition and inhibition.

With regard to the neurasthenic groups we have reason to believe that the essential deficiency is in the protoplasm of the nerve cells. Hodge showed these deficiencies in the protoplasm of thoroughly fatigued cells in the active nerve centers of lower animals. There are probably other deficiencies of a chemical nature. Hill and Bernard in London did some experimental work showing that lax abdominal walls with naturally low blood pressure permitting the blood to leak into the splanchnic area vessels was a characteristic of neurasthenia. There is much evidence to show that the neurasthenic group is often associated with the lowered

conditions accompanying organic disease such as chronic tuberculosis, cardiac disease, arteriosclerosis and some organic diseases of the nervous system.

Age.—The neuroses seem to belong chiefly to the period of life from puberty to middle age. Neurasthenic conditions are most frequent from 20 to 30 years of age. When neurasthenic symptoms appear after 50 one should search very carefully for some organic disease. Hysteria is most common from 20 to 40 but may appear at any age. Children resist the shock of accidents well, old age badly; it frequently precipitates premature senility.

Sex.—Women are more subject to the hysterias, mild neurasthenia and especially to psychasthenia. Men more frequently have the severe neurasthenias and hypochondria, and we know now that traumatic hysteria is much more frequent in men than was formerly thought. Women are more frequently afflicted than men in proportion to the number exposed to accidents and are slower to recover, but as men are more frequently exposed to violence the majority of cases that come before us for examination are men. Cabot says laboring men have no right to such troubles as neurasthenia, but we find that the traumatic neuroses are not uncommon among them and they seem to be more common than formerly.

Diagnosis.—The viewpoint of the practical surgeon employed by a corporation and the modern neurologist is quite different. I think there is a middle ground where reasonable neurology and practical common sense may meet and in a measure agree. Our chief difficulty is in diagnosis, in the proper estimation of the value of signs and symptoms. Many of the subjects that come before us are interested in making out a case, in some cases wilfully in others un-

consciously. It is well to start with Weir Mitchell's admonition to "watch her enter the room." Another of the wise ones, Osler, says, "Observe him as he enters the room, his clothing, manner of carriage, facial expression, the humor he is in. The appearance of the patient is often quite characteristic, suggestive but difficult to describe." Osler further says "neurasthenia is a disease above all others which has to be diagnosed from the subjective statements of the patient and from an observation of his general behavior rather than from the physical examinations." In hysteria the facts stated by the patient help but little; the method of stating them may help much. There is a diagnostic value in the rather extravagant language in which the trials and sufferings are related and in the unusual features and the halo of mystery with which an attempt is made to surround the case. It is very important to let the patient tell his own story and tell all there is to the case; avoid suggestion in the way of question. As one authority puts it: "The pain that is not, when asked for, soon becomes." The same is true of other symptoms.

We can hardly speak of an acute neurasthenia, though a quite abrupt appearance may show itself after unnoticed premonitory symptoms. But as a rule neurasthenia is of gradual development through weeks or perhaps months after an accident; in some cases it may seem to develop out of the depression of the surgical shock if the accident involves severe physical trauma. But the depression of surgical shock is not neurasthenia. Hysteria may appear immediately after an accident, or it may appear suddenly or develop gradually after a so called latent or "incubation" or "meditation" period. During this period the patient has time for the direction of concentrated attention to

the accident, often to the particular part of the body involved or supposed to have been involved in the accident. During this period of meditation there goes on quietly the work of autosuggestion that finally develops the hysterical outburst. Traumatic hysteria differs from the ordinary hysteria of constitutional origin in that the outburst is often preceded by an unnatural calm; this seems particularly true of post operative hysteria. It also differs in that it does not often show so many of the ordinary signs and symptoms; it is more likely to show major seizures; it is also more likely to be a mono-hysteria, for instance, an injury to a limb may be followed by a hysterical contracture involving that limb only.

Pain is a prominent symptom in both varieties of neuroses and as in many other diseases is often the first and most prominent symptom in the complaint. The average mind instinctively associates pain with injury and in making out a case will emphasize, often overemphasize, the pain present, whether it fits into the rational symptomatology of the case or not. This is especially true in hysteria; the pain is agony. Speaking of pain in hysteria Starr says: "It is very acute and the patients appear to suffer intensely. It is more agonizing than any disease of the organ could give. These are mental pains, true hallucinations of pain and are little affected by analgesic remedies, even hypodermics of morphine, except as these act by suggestion; these pains are often suddenly relived by suggestion. In these cases joint pains are not attended by other signs of joint inflammation except spasm of the muscles on moving the joint." Starr quotes a case of such joint pain that, when the joint was amputated, appeared in the corresponding joint of the other limb.

Pain in the back is almost a constant complaint in both varieties of traumatic neuroses. It may be limited to certain spinous processes, with radiations from them or it may be quite diffuse. Undoubtedly much of the pain in the lower back is real pain due to strained muscles and ligaments of the back in falling or resisting fall. Herbert Page believes that even where there has been no violence, at the moment of jar or shock the lumbar and dorso-lumbar muscles, ligaments and articulations are thrown into such sudden stress and strain that pain, muscle spasm and deep tenderness are the legitimate result. Such pain is not part of the neurosis but is referred to because it is so very common in these traumatic cases.

The pain in neurasthenia is less severe than in hysteria; there is pain and tenderness in the nape of the neck and over the spinal processes, in the head, tenderness of the scalp, hyperesthesia of the skin, sensitiveness of internal organs. Mental pain is often pictured in the face. The special senses are often acutely sensitive. The threshold of pain and sensation is often far above the normal. The headache of neurasthenia is usually occipital; it may be frontal. The headache is not a sharp pain but rather a strange band-like feeling. The feeling of pressure within the head is quite constant.

In traumatic hysteria two symptoms most frequently met are paralysis and anesthesia. They are usually associated; of course there may be much anesthesia without paralysis. Motor paralysis in these cases means a mental inability to initiate volition. Paralysis on the left side seems to be 3 or 4 times more frequently found than on the right side. According to Burt paralysis of the left arm and much less complete paralysis of the lower limb on the same side is

most frequent. According to others the lower extremity is more frequently affected than the upper. In hysteria as a rule the paralysis is more complete than organic paralysis. There is never loss of the knee jerk as in organic paralysis. The knee jerk is usually increased but the whole leg or body is jerked. True ankle clonus is never present. The movement is an irregular to-and-fro movement. True Babinsky's reflex is never present. One can often succeed in developing sufficient voluntary motion in these cases to differentiate them from organic paralysis. Minor degrees, amounting to weakness of the part often follow trifling injuries. In extreme cases there may be very complete paralysis of large portions of the musculature of the body.

Anesthesia and analgesia are very common. They are irregular in area, not corresponding to nerve distribution. The injured part may show anesthesia especially if it be a limb. The chest shows none as a rule, the head and particularly the face less than the limbs. The area is often glove-like, the sleeve-cuff or stocking-form. There are often patchy and variable areas; it comes and goes readily. Anesthesia of the mucous membranes is more frequently found than has been thought. An authority says "the anesthetic conjunctiva is the mark of hysteria." It is well to test the nares for sneezing and the fauces for retching. The pain sense is more completely absent than in organic trouble. The outline of areas is better defined than in organic disease.

It is stated that concentric contraction of the field of vision may be the only positive sign of hysteria present. The field of vision may be of the "shifting type," narrowing during the examination. There may be partial or total deafness on either or both

sides, usually on the side on which the cutaneous anesthesia is well marked. In mild grades of hysteria hearing may be exceedingly acute. The "irritable eye," irritable to light, belongs to neurasthenia, but the victim of hysteria prefers a darkened room. Color vision should be tested; the red field may be larger than the blue which is contrary to the normal condition. One object may appear as several. A familiar object may not be recognized by vision yet readily recognized by feeling it. One may be able to recognize very small objects but not large ones. In these cases the examiner should not be too ready to assert that the person is indulging in conscious deception.

Tremor is frequently found in both hysteria and neurasthenic cases. In typical traumatic neurasthenia a fine tremor is almost constantly found about the eyes and often in other parts of the face. A fine tremor of the tongue is very common; tremor is not likely to be found in the case of a malingerer, unless possibly in the case of a victim of alcoholism. Severe fright may give rise to a tremor which may become permanent.

In hysteria there may also be a very fine tremor often seen in the hands, at times in the face or tongue, not unlike the tremor of alcoholism. The tremor of hysteria is often coarse and jerky.

There is a characteristic tremor that belongs to "an obscure traumatic degenerative psycho-neurosis analogous to a severe form of paralysis agitans" (Putnam). The hysterical tremor in some cases is of the type of intentional tremor.

The more carefully the convulsions of hysteria are analyzed the less they appear like those of epilepsy. The initial cry, the lack of suddenness of the fall, the character of the movements are all different. The

epileptic convulsion rarely lasts longer than a few minutes, the hysterical often very much longer. The former are rarely immediately repeated, the latter frequently. The movements of the hysteric usually partake of the character of a purposeful struggle. Epileptic convulsions are most frequent at night or in the early morning; hysterical in the day or evening, after some excitement and always in the presence of some audience.

We should not lose sight of the fact that the traumatic neuroses may be present with organic disease; their symptoms may easily lead one to overlook the early stages of organic disease. One should inquire into the health of the patient for some considerable time previous to the alleged injury. An apoplexy may have caused the fall and the paralysis rather than the sudden movement of a car, or the shock of an accident may have superinduced an apoplexy in a subject already prepared to have one. Hysterical symptoms with an intentional tremor may all be the symptoms of a multiple neuritis and in some cases it may be very difficult to make a differential diagnosis. A number of organic brain diseases such as tumors in their early stages, trauma with microscopic hemorrhages or other lesions, hemorrhagic meningitis and septic encephalitis may cause typical outbursts of hysteria. Other diseases and organic lesions in their early stages give origin to typical neurasthenic symptoms. One should always be on the lookout for tabes, paresis, multiple sclerosis, arteriosclerosis and especially the conditions that lead to an apoplexy, chronic tuberculosis, cardiac diseases, the true insanities, and Albutt emphasizes rheumatoid arthritis.

According to Dercum the traumatic neuroses never originate the true insanities. Of

course, a person with a strong predisposition to insanity after trauma or severe shock may become insane and the trauma or shock may have acted as the exciting cause.

During late years we have been learning that in the production of the traumatic neuroses the psychic factor is much more prevalent than was thought. We are learning that mental or emotional shock gives just as pronounced and troublesome symptoms as actual lesions of nerve tissues. We are learning that physical violence of the most trifling character may give intensified symptoms if it so disconcerts the victim that he cannot call into use the protective power of the will, or if the violence is of such a kind, as for example, injury to the head, as to create apprehension of trouble to come. We are also coming to realize that what otherwise might be an innocent matter may become a serious and prolonged trouble if accompanied by severe pain and loss of sleep and that the proper management in the beginning of traumatic hysteria may save great distress and expense.

We are learning that injuries of moderate severity such as jars or falls without fracture or serious visible contusion may cause actual lesions of nerve tissue, minute hemorrhages in the brain or cord, necrosis of nerve elements, and widespread vasomotor disorders, with typical traumatic neuroses as the only symptoms just as they may be the only symptoms in the early stages of brain tumor. We are learning that many persons have diseases or disorders in a latent form or a latent tendency to disease that may be rendered active by physical or psychic trauma.

The diagnosis in these cases is often complicated by a variety of interests, medico-legal and others. Conscious simulation

is often present. Unconscious simulation is largely in proportion to the degree of hysteria present, but that is the way of hysteria and the person is not to be charged with feigning and fraud. The worry over legal complications, loss of work, expense which is always a serious matter to the poor, the possibility of permanent invalidism, all these play their part in protracting the course of the trouble and in making the case difficult to manage.

Scientific conclusions must be arrived at chiefly in those cases developing after accidents in which there is no possibility of making claims for damages or insurance. The tendency has been not to give these cases due consideration especially where there has not been gross physical injury.

Prognosis.—According to Bilstrom a Swedish writer, complete recovery occurs in about 90% of the cases. The longer the interval the larger the percentage of complete recoveries. If a complete settlement could be made immediately it would shorten the course of many cases. Unfortunate suggestions and repeated examinations render the prognosis less favorable especially in hysteric cases. The local or mono-symptomatic cases of traumatic hysteria do the best; as previously indicated these are not likely to have a constitutional hysteric basis. Uncomplicated neurasthenia makes a good recovery as a rule. Complicated cases and those with a marked constitutional basis are often slow and trying. Strümpel says: "We know of many cases where such patients, in spite of the fulfilment of every desire, have lived for years in a state of permanent neurasthenia, incapable of anything, and finally have fallen into a state of profound mental dullness."

RECOVERY.

BY

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When we have arrayed before us all the various therapeutic measures they are legion. If one single measure could accomplish one half of what is claimed for it there would be no more disease, every germ would be annihilated and the millenium would be at hand. So far there is no system, no pathy, no rule by which disease can be cured.

While each therapeutic measure seems to differ from one other, yet they all have one thing in common, namely, alleviate or cure disease.

If we bear in mind that there is only one way in which disease may be cured, it behooves us to investigate that one way. Before we do that however, we must first have a clear comprehension of what disease really is. The word almost explains itself. "Dis" meaning a negation, "Ease" a certain state of wellbeing, a state of rest. Dis-ease the opposite or a state of unrest, a condition of the body marked by inharmonious action of one or more of the various organs due to an abnormal condition or structural change.

As long as a being is perfectly normal, that being is not aware of the fact that he is the possessor of any organs at all. The very moment that an individual becomes aware of the fact that he has a stomach, that moment he has some dis-ease; when he

suddenly discovers that he has a liver, that moment he has some dis-ease, not necessarily of the particular organ of which he may complain, but he has a dis-ease. He is not at ease with himself, there is some inharmonious action of one or more of his organs.

One of the main sources of confusion in therapeutics is due to the fact, that the textbooks classify disease as diseases of certain regions of the body with an indefinite consideration of the symptom-complex.

Certain conditions require certain therapeutic measures. It is the condition or the reaction of living cells that should interest us and not the name of the disease.

A non-infected inflammatory process associated with infiltration, no matter in what part of the body it is found, calls for practically the same necessary reaction.

Infectious conditions everywhere, should be met with modalities having in view the removal of the infectious material. This may be accomplished by a positive chemotropism if possible, or the infection may be made inoperative by artificial impairment or destruction of the germs. Germicides, evacuation or surgical interference will be indicated.

A patient may have all of the stereotyped symptoms, yet not the disease; or he may have the disease named and practically none of its symptoms. Examples are syphilis, tuberculosis and typhoid fever.

Pathology is that branch of medical science which deals with the various changes that take place under abnormal conditions in the body. The science of pathology has passed through a great many changes. One theory was accepted until a better one took its place, only again to be displaced by still another, and so on from the explanation of the medicineman or the priest to the Galen-

istic era. After this once great authority was brushed aside, various kinds of systems sprang into vogue only to be superseded again by a perhaps newer, but equally short-lived system.

The period from 1845 to 1895 is the most memorable in the history of pathology. Virchow, dissatisfied with the various systems, brought to light his cell doctrine and cellular pathology. According to Virchow, all disease is directly traceable to the individual cells of which the body is composed. Each normal cell springs from a normal parent cell; each cell depends upon its neighboring cell for equilibrium and harmony of action. Disturb or change one cell and all the cells in the immediate neighborhood must feel the effect—this effect we term disease.

Frequently, pathology is looked upon as possessing no other function than to furnish a long list of names *descriptive of the various morbid states* of any particular organ or region. This is much to be deprecated, for the doctor soon gets into the habit of treating the name or the disease-process rather than the actual pathological changes which have taken place. In fact he seems to forget that each patient presents some definite underlying reason why he has not recovered from his ailment or why he was taken sick at all. Two patients exposed to the same injury seldom suffer exactly the same consequences. In other words, the reaction of living cells to an agent, varies in different individuals. As this resistance to disease differs in different individuals, so does the recuperative power differ.

In nature there is only one way in which this recuperative power manifests itself; it may vary in degree, it may vary as to time, but the process is essentially one of *inflammation*. In fact the word pathology

might be used to mean *the reaction of the individual cells to some injury with an attempt on their part to a recovery or reestablishment of the previously disturbed harmony between the various parts*.

Inflammation then, is the reaction of living cells to an agent desirable or undesirable to the cellular system. This reaction may be either local, general, or both. When both, it is constitutional in character.

This reaction of the cells or inflammation, is accompanied by certain manifestations not previously or ordinarily present. It is something that emanates from within, or from the injured cells, assisted by the uninjured ones; it is therefore a process and not a state. This process of inflammation is a succession of changes which occur as the result of reactions in living tissue, injured or subjected to treatment; provided, that the injury is not of such a degree as at once to destroy its structure or vitality. In other words it is *a reaction of irritated, stimulated, or damaged tissue which still retains its vitality*.

This definition is very important, for as we shall see later, when a tissue is incapable of reacting to irritants, either that cell or tissue becomes a foreign body and must be discharged from the economy, or it may undergo certain *changes* and *modifications*, such as fatty degeneration, or fibrous accumulations. These changes are for the purpose of making the otherwise foreign substance as innocuous as possible under the circumstances.

The manifestations which accompany this reaction are:

Redness, due to the dilatation of the blood vessels.

Swelling, due to a part injured either chemically, mechanically, or by the introduction of noxious germs. There is a

separation of contiguous cells, into which takes place an exudation of fluids, cells and corpuscles; hence the swelling.

Heat, wherever there is increased energy there is increased circulation with the result of increased heat.

Pain, this is the result of an irritation to the sensory nerves and the pressure exerted by the swelling.

Disturbance of function is the necessary result of loss of equilibrium between the various component parts. All these cardinal points are the result of a chemotaxis. At this time we are obliged to take the sympathetic nervous system into consideration. By some inherent power, not yet fully appreciated, the fixed as well as the wandering cells are attracted to the injured part. This chemotactic process is evidently of an electrical nature, for we have a positive and a negative chemotaxis; under certain circumstances some cells are attracted while others are repulsed.

In a vascular area, the first manifestation is the dilatation of the arteries; later, the veins. If this dilatation is just of the proper kind and amount, then the repair is at once begun; but if the injury is too severe, or the germs too virulent, then there is either delay or no reaction at all. Again the reaction *may* take place and later the cells become overwhelmed with the result that there is a slowing of the blood stream in the dilated vessels leading to congestion and finally a stasis. During such a stasis, the process of inflammation is hindered and the further repair is made impossible. Not only is the process of repair interfered with, but, as the wandering cells must either act as scavengers or *themselves* break down, an ulcer or sloughing surface forms.

There are some diseases incapable of causing a proper or sufficient reaction and

the process of inflammation is incomplete. Gonorrhea is an example of the acute variety; tuberculosis and leprosy represent the chronic ailments. In these cases the toxic elements of the microbes and the antagonistic powers of the cells are nearly balanced. In gonorrhea, the germs are found in a perfectly normal state within the cell body of the leucocytes, because the leucocytes do not seem to be able to destroy them; on the contrary, many leucocytes must be discharged from the body after they have become germladen. In tuberculosis, it frequently happens that proliferation of the germs takes place despite their intracellular position. It may be said *that the more virulent the microbe, the less the tendency for the leucocytes*, and for the other fixed cells, *to take up the bacteria*. The less virulent the microbe the more extensive the phagocytosis.

Repair of injury or recovery from disease of any kind depends then, upon the proper kind of reaction by living cells to the injury produced, the germ present, or the toxic element within the system. This reaction, be it large or small, local or general, sufficient or insufficient, is summed up in the one word "*inflammation*."

231 W. 96th St.

A Tub Bath in Bed.—If you have to give a tub bath in bed says a writer in *The Nurse* and are unable to secure the regular apparatus, a satisfactory one can be improvised. Put a large rubber sheet under your patient, cover the patient with a blanket, and string a clothesline around the bed, fastening it to the headboard and footboard. Fasten the rubber sheet to the clothesline with clothespins and fill with water to the desired depth. Have a washtub at the side of the bed to empty the water into when through. A pillow should be placed under the rubber sheet at the patient's head.

FACILITATING BACTERIN THERAPY.

BY

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Under the above heading there is a short discussion in *AMERICAN MEDICINE*, May, 1915, which seems to have been prompted by the fact that a certain medical gentleman asked the following question: "I want to find out why it is that sometimes I get results from bacterial vaccines so brilliant as to seem almost miraculous, while in the very next case I may fail absolutely."

There is always a reason why we succeed; and likewise an obvious reason for our failures. Let us consider it a duty, therefore, to search for the condition that brings about those negative results.

Apropos: I think it has been stated that today immunity is but an accidental condition produced by an unknown force at work in strange environments. However, there is ground for the hope that when this force has become harnessed by the ingenuity of man and when it can be directed with scientific precision into the avenues of pathological changes in the human body, such conditions will no longer be accidental. Then it comes within the power of medical men to unfold nature's cloak of protection and gently wrap it about the susceptible individual, thus raising a patient to that high level of physiological perfection we are now pleased to call the enjoyment of good health.

Not so remote from our conceptions as to be called accidental is the physiological action of bacterins. When a properly selected case fails to respond, we have means at our disposal whereby the cause of this failure may in many instances be determined.

We have long since been reminded that the internal secretions may influence in a marked degree the therapeutic efficiency of bacterial vaccines. That this is a scientific fact, we now no longer doubt; but speaking of internal secretions, we embrace all the troubles of Pandora's box, because conditions which obtain from faulty glandular activities are as varied as they are numerous. It is, of course, not within my power and therefore no intention of mine to here burden you with a discussion of what the French may call *hypocrinie*—that is, a general reduced action of the ductless glands with a corresponding diminution in the production of their essential hormones. If I succeed to here point out that the hepatic function is a necessary source for elimination of waste products incidental to the immunization process, the purpose of this paper will be accomplished.

It becomes advisable in order that we may refresh our minds, to pass in rapid review some of the salient points pertaining to the mechanism of immunization. The human organism is equipped with efficient protective machinery against invading microorganisms consisting ostensibly of the leucocytes and the red blood cells with their digestive ferments, the anti-bacterial substances in the blood fluids, and the liver as the excretory organ of the waste products, incidental to the immunization process.

The leucocytes come here into consideration by virtue of the fact that they are capable of ingesting bacteria, and disintegrating these by intracellular digestion. The red blood corpuscles have a complementary immunizing function to that of the white blood cells—each, however, occupying a special field. Thus the leucocyte deals with all formed bodies and full sized protein molecules of foreign type that find entrance

into the blood stream, while the red blood corpuscles deal with the cleavage products of protoplasmic activity.

The anti-bacterial substances are bacteriotropic elements in the sense that they turn toward and enter into combinations with other elements of the bacterial body.

Protein metabolism is the one great scientific problem which has received attention by the savants of our day. These men have busied themselves in tearing asunder the protein molecule and revealing the intricate parts of its primary constituents. As a result of their brilliant work we have now a clearer conception of what really takes place when foods are taken into the digestive tracts and subjected to the action of digestive ferments—a lesson that may profitably be added to the routine religion of a bacteriologist, as it serves to illustrate in a somewhat graphic manner the phenomenon of immunization.

Bacterial vaccines are foreign proteins and their physiological action may therefore be considered in the light of recent scientific discoveries pertaining to the phenomenon of protein cleavage which has been demonstrated by such eminent men as Vaughan, Williams, Beveridge and others. We look upon bacterins as specific proteins consisting of particulate bacteria and their products. Morphologically these particulate cells show but little variation; but their chemical structure is quite as complex as many of the cells in higher animals. They contain carbohydrates, nuclein bodies and polymers of the mono- and di-amino acids. They are glyconucleo-proteins which may be interpreted as signifying that functionally they are highly developed.

When such bacterial proteins are injected into the blood, as a therapeutic agent in form of vaccine, it becomes the duty of

one set of cells—the leucocytes—to digest and metamorphose these foreign proteins. What the ferments of the digestive tract accomplish in the case of food proteins is accomplished by ferments of the leucocyte in the instance of bacterial proteins with which they are brought in contact. How is this accomplished? Our scientists would tell us that through a cleavage action the large protein molecule was disintegrated and converted into assimilative material. Such phenomenon is brought about primarily by the action of ferments elaborated by the leucocytes. It has been demonstrated that these cells have extra-cellular and intra-cellular ferments. The extra-cellular ferments prepare or modify the protein molecules thereby rendering them a palatable pabulum for the leucocyte to digest, which is accomplished by the aid of the intra-cellular ferments. The performance of a phenomenon such as we have just outlined when changes in the molecular structure of the cells are effected through great activity is necessarily accompanied by the loss of potential energy as well as actual gain and loss of physical material.

Destructive metamorphoses are always attended by loss of substance; and it is axiomatic to say that the precise character of a substance given out as a waste product must be dependent on the character of the substance available to replace it. The substitution made, the discarded group of atoms flows away in the blood stream to be taken care of by the red blood corpuscles. These cells, it has been pointed out, have an immunizing function complementary to the leucocyte.

We may interpret the work of the white cells and red corpuscles in words of the bacteriologist by saying that the leucocyte, in the performance of the general scaven-

gering function produces complement which is a ferment of the order of trypsin and anti-bodies of types known as bactericides, bacteriolysins, opsonins and precipitans. Meantime the red blood corpuscles aided and supported on occasions by various and sundry of the specialized tissues such as the liver, kidneys and so forth, produce complements of a different order from those elaborated by the leucocyte.

The residual molecules left by the leucocyte for the red corpuscle to take care of may be of such nature as to seriously damage the red cells. Whereas such injury to the body cells would be detrimental to the entire organism the damage to the red blood corpuscle is not necessarily a matter of consequence.

The red blood corpuscle is whirled on in the blood stream until it reaches the liver, and there destroyed; its noxious molecules being discharged with countless others of similar origin into the bile duct.

It would be interesting to inquire what physiological action leads to the destruction of the red corpuscles in the liver. But any attempt to elucidate is only made for the purpose of completing a mental picture of the phenomenon just described. To this end it may be assumed that osmotic pressure will suffice. The substance of the hemoglobin being in part decomposed by the imbibed foreign enzymes and its osmotic pressure thus enhanced. The liver may well be regarded as an organ which serves as a great lagoon where blood from the portal vein becomes relatively static and reduced in pressure—a condition which would facilitate rupture of the red corpuscle.

In any event, through osmotic or chemical action, disruption takes place and the unassimilable remnant of foreign protein is excreted into the intestines. In view of

these facts it is safely within the limit of conservatism to say that the liver plays a most important part when bacterins are used therapeutically; and it stands us in hand to guard its activity. Hepatic functions becoming insufficient, the patient will suffer auto-intoxication; and the anticipated favorable clinical results, from the use of vaccines, are turned into disappointment.

The writer has had opportunities to observe the action of bacterins in a rather large number of cases particularly in infectious arthritis, and we have adopted as a routine adjunct in the treatment of all cases when vaccines are used the administration of some hepatic stimulant. By so doing our clinical results have become more constant and much more satisfactory.

Many, if, indeed, not all, of the well known remedies and combinations of same usually employed in hepatic insufficiency have received our careful study from time to time in this work. It would no doubt, be rather tedious to discuss the results we have obtained with these different drugs and it suffices to say that any hepatic stimulant is useful, some to be sure, more so than others; and different patients respond differently. During the last two years, or longer, it has become a routine treatment with us to give exclusively some one of the natural saline laxative waters such as Hunyadi Janos, Pluto, or Abilena which have proven to give excellent results surpassing any other hepatic stimulant or cholagogue we have had occasion to use. Our experience with this class of cases has been somewhat extensive and we have been led to believe that the conclusions of Frey are justifiable.

It will be remembered he observed that the action of a nascent hypertonic mineral water upon the liver is due first to a change in the circulation of that organ, which pro-

duces in time an increased specific activity. The liver is the first halting place, as it were, where the salts after absorption, produce a brisker osmosis and thus a more active circulation. We can readily see how a passive hyperemia of the liver in the initial state may, in this manner, be relieved. A valuable clinical observation bearing on this subject is reported by Bain; and was made in a case of permanent biliary fistula besides complete occlusion of the choledochus. In this patient the observer was able to prove that a hypertonic mineral water increased the bile secretions; and also the dried residue. From these observations Bain concluded that the effects were due to the mineral salts contained in the water, as water alone was without any effect upon the bile secretion.

There comes to my mind just now a disturbing thought; and to illustrate, permit me to give you a repartee between Frederick Reynolds, the well known dramatist, and Dr. Baillie. Mr. Reynolds enquired "Doctor, don't you think that I write too much for my nervous system?" "No, I don't" answered Doctor Baillie; "but I do think that you write too much for your reputation."

Of course, being somewhat concerned about my reputation, I have decided to conclude by saying that not all cases which fail to respond to bacterin treatment could be made to do so by proper stimulation of the patient's liver; but I am well convinced from experience that more constant and even more gratifying clinical results will be obtained by properly guarding the hepatic functions.

Injections of a suspension of Bulgarian bacillus is stated to be very effective in gonorrhea.—*Amer. Practitioner.*

MEDICAL DIAGNOSIS AND TREATMENT OF TYPHOID FEVER.¹

BY

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In the Spring and Fall of each year, we are apt to be confronted with cases of typhoid fever which in their incipency are very misleading. The patient has had a delightful summer in a most healthy location, and returns to the city apparently in perfect health. He may soon develop a slight malaise, or slight diarrhea which is usually explained by the change of climate, drinking water and environment. If one waits for the classical symptoms as an entirety, it will mean the prompt change in physicians, as patients want to know what is the matter; therefore it behooves us to be somewhat overzealous in omitting no method that may assist in making a diagnosis.

As a convenient division for diagnosis we might subdivide the symptoms into suspicious; more than suspicious; and positive.

First: *Suspicious*. Those cases which have been in perfect health and develop malaise, low, dull headache with backache, a trace of albumen in the urine, slight nose bleed, loss of appetite, and either a slight diarrhea or constipation, with a sense of evening temperature. These cases will go on for a week or more with symptoms gradually growing worse, and in the meantime, will have taken headache powders, local applications to the back to relieve the pain, cathartics to correct the bowel condition, and possibly the opium series to overcome a mild diarrhea. It is in the incipient stage when no definite symptoms are present in

¹Read before the New York Polyclinic Clinical Society.

the aggregate, that we turn to the blood and urine for some confirmation of our suspicions.

The urine is usually high colored, with an increase in indican, possibly a trace of albumen or casts, and an Ehrlich Diazo suspicious or positive. The urine may be examined while the blood is being sent for a Widal test. Remember that a Widal-negative on the first examination may be positive at a second examination.

Let us not be deceived in incipient typhoid because a patient feels better as the day progresses. With the slight evening rise in temperature, there is a toxic stimulation of the brain centers, and a false sense of security may temporarily allay suspicion.

Unfortunately the differential blood count is not conclusive at this stage. A slight leucocytosis may exist, with some increase in the polynuclears. The polynuclears however, are usually reduced in proportion to the intensity of the toxemia, particularly so as the disease progresses.

Passing to the second stage of *more than suspicious*: we find the headache and backache have become unresponsive to the coal-tar series, the urine shows a marked trace of albumen, there is tenderness over the spleen, and the abdomen has become tympanic and somewhat painful to pressure. The bowels do not react to the medication prescribed, and either the diarrhea continues or an obstinate constipation intervenes. The patient has less disposition to attend his ordinary pursuits and prefers to rest on a couch or even lie in bed. A Widal is now usually positive and even when negative, an extra precaution should be taken by insisting on a blood culture, as in some cases colonies of typhoid have been clearly shown when the Widal persisted in

being either negative or doubtful, and the patient in the meantime was allowed to be up and about.

If the pulse rate is closely followed in the evening during this stage our suspicions will be on the alert on account of the high pulse rate.

Passing to the *positive symptoms*: We have learned to depend most upon the Widal reaction—at times possibly too much so—and as I would again emphasize that when positive we know the case is typhoid, remember a convincing clinical picture may have a negative test and then we must culture for typhoid colonies.

Rose spots are not always present at this stage and there is danger of confusion with small local infections of the skin. The true rose spots come in successive crops or series, are not elevated above the surface, disappear on pressure, and may appear on the back before showing on the abdomen. A good plan is to mark spots as they appear with an anilin pencil. The tongue has assumed a thick furred appearance with brown crusted center and reddened margin. The breath has a foul odor, and the lips may show a thickened infiltrated condition. The temperature has now mounted to 103 or 104 degrees, and remained there: albumen and casts are unmistakably present, the facies of the patient assumes a more serious aspect and he lies apathetic with flushed face and, as night comes on, delirious.

Differential Diagnosis.—The conditions most frequently confused with typhoid are *malaria, meningitis, intestinal stasis, pneumonia, acute miliary tuberculosis* and occasionally *salpingitis*.

Malaria.—Malaria may be suspected when the patient recalls some previous attack. On the other hand, with this sus-

picion in mind he may have taken enough quinine to temporarily clear his blood of the plasmodium. If he has not done so, the malarial cycle is again taken up. His days are alternately comfortable, and the mild purgation with free doses of quinine, a negative sero-blood test, and the clearing up of the chill and fever after quinine should not leave us long in doubt.

Meningitis.—Meningitis, particularly in children is often misleading. The apathetic state with slowly increasing symptoms, where night crying is absent, twitching of extremities slight or absent, reflexes only moderately increased, rigidity of the neck slow in developing, Widal negative, blood culture negative, a spinal puncture with undemonstrable t. b. and negative to culture may not be positively differentiated for a week or ten days.

A suspected case of typhoid recently came under our observation: the Widal negative was soon followed by mild rigidity of the neck: a spinal puncture was cultured and showed a meningo-coccus. A dose of stock vaccine from the Board of Health was administered and in 24 hours the temperature was normal, the brain symptoms cleared, the stiffness of the neck etc., promptly disappeared. The patient has developed no meningeal symptoms since.

Intestinal Stasis.—Toxic intestinal stasis often gives a confusing set of symptoms. As the gastro-intestinal tract shows the effect of toxic absorption, the temperature may rise abruptly, the tongue become furred, headache marked, and a general condition of malaise supervene. The prompt abeyance of all symptoms on the administration of a dose of calomel with a negative blood and urine should clear the doubt within three or four days.

Pneumonia.—Pneumonia rarely confuses, except in the earliest stages. A low grade type may be slow in developing, particularly the tubercular variety. The presence of cough and symptoms pointing to lung involvement, and later consolidation with rusty sputum, etc., render this mistake improbable.

Acute Miliary Tuberculosis.—Acute miliary tuberculosis may be easily confused in the early stage. The pulse rate and respirations are higher in tuberculosis, cyanosis more marked. Examination sputum if present, may show the tubercle bacillus. The blood picture is negative to typhoid. Spinal puncture may sometimes show the t. b.

Salpingitis.—Salpingitis while having abdominal symptoms usually gives previous vaginal symptoms, and is cleared up by bimanual examination.

Treatment.—It is well to bear in mind that prophylaxis plays a most important part in the treatment of typhoid. This phase will be omitted as the following paper will dwell at full length upon the subject. In this connection, I refer to the use of serums. As to general prophylaxis we most note:

First.—The disinfection and care of the patient and the things in immediate contact with him.

Secondly.—The excreta, including feces, urine, sputum and vomitus.

The nurse is careful to keep her hands disinfected and the excreta properly voided in antiseptic solutions, but at times is ignorant of what constitutes thorough disinfection.

Bichloride of mercury, carbolic acid and chlorinated lime are probably the most frequent solutions used. It is well to bear in mind that the typhoid bacillus is very

tenacious and will remain in the urine for months.

A good solution of chlorinated lime is made by adding six ounces of lime to the gallon of water. Of this solution, one pint should be placed in the bed pan before the discharges are received and two after. The contents are carefully and thoroughly mixed, and the contents allowed to stand three hours before emptying into the vault. If carbolic acid is used a one to twenty solution is advisable and an amount of disinfectant equal to double the amount of excreta is necessary.

A 1:1000 solution of bichloride will suffice in an amount one-fifteenth of the fluid to be disinfected.

Inasmuch as careless disinfection of the bedding may cause a spread to laundress or attendant, the sheets should be removed when soiled, and immediately disinfected as above, and then boiled for half an hour. A rubber sheet should be used over the mattress or a sheet of one of the impenetrable sheet papers, which may be burned when soiled. Clothing and bedding about a typhoid patient should never be sent to a general laundry.

The incipient typhoid case is sometimes rebellious about going to bed, and in the vigorously healthy it is not uncommon to see a boy playing football stimulated to greater effort while carrying a very marked temperature.

We need hardly emphasize here the environment necessary when a case is definitely diagnosed. Each case is one for individual plan and management. The man away from home belongs in a hospital: the sick man belongs where he can be made comfortable for a period of six or eight weeks, so unless he is well along with his disease, get him there at the earliest possible moment.

A competent nurse is necessary. Too often the family are prone to believe they are able to assume the responsibility and the physician knowing of the limited means at hand is tempted to yield. This is a mistake. In no disease that I know of is a competent, level headed nurse so valuable as in typhoid.

Before taking up the question of food, medication, and the brief survey of treatment, let us look for a moment at the pathological lesion we are combating.

The lesions involved are Peyer's patches, the lymph nodes of the intestine, the mesenteric glands, the gall-bladder and the spleen. The first process is one of infiltration; the cellular elements partake of the nature of lymphocorpuscles. The adjacent mucosa is likewise affected. From the eighteenth to the 25th day necrosis sets in, granular and fatty degeneration take place and either absorption or possibly hemorrhage with further necrosis and perforation. It is well to bear in mind that only the mildest cases avoid necrosis. The ulcer heals from the periphery toward the center.

Many stages of ulceration and infiltration may occur in a typhoid intestine at the same time, fresh invasions in new areas constituting a relapse.

Food.—Probably one of the most trying problems in the treatment of typhoid is the food question. While the areas involved as already stated are Peyer's patches, low down in the ileum, we are treating a toxic infection which disorders the entire digestive tract. There were times in the treatment of typhoid when starvation was urgently advised. We were told that under the existing conditions of the intestine little food could be digested satisfactorily, and a complete rest even at the expense of starvation was desirable.

In following autopsy intestinal findings in fatal typhoid we are impressed with the varied picture presented. Some ulcers are forming—some in a state of ulceration and others healed.

In other words the products of toxemia are constantly being formed, and although as a disease it runs a more or less definite course, its real limitations are in terms of the personal ability of the patient to manufacture antibodies in sufficient quantity either to neutralize or overcome the infection.

We all recognize the need of nutrition in long continued fevers. With a single eye on the intestinal ulcer, we are timid sometimes about the consequences of perforation and extension, and do not give the patient the amount of nutrition he really needs. If we carefully followed the days of illness—particularly the period of most likely ulcer formation—taken in terms of systemic infection, temperature, etc., and kept strict watch over this period we could afford to be more liberal with food at other stages of the disease.

A caloric method of feeding would seem most desirable if it could be accurately applied, but the weakest link in the system is to know not what he needs, but what his body economy can take care of. In a patient recently under observation 43 years of age and weighing 140 pounds, this method was used (See Feeding Chart on back of article). From the 13th to the 26th day of the illness the daily consumption of food was 1,310 calories. In health the daily caloric need is 20 calories per pound of body weight. A man weighing 140 pounds would therefore require 2,800 calories daily. In the case first quoted he was able to take 1,310 calories or approximately one-half the normal need. The point I am trying to emphasize is not starvation, but

a diet suited to nutritive absorption. During this period his stools varied from one to three daily.

In connection with the lack of food taken we must duly consider reduced and disordered secretion in the gastro-intestinal tract. While the addition of the various enzymes should not be added to food with the result of over-feeding, at the same time there is no question but that the enfeebled tract does appreciate some daily help during the stage of diminished secretion. Without taxing your patience with a daily routine in feeding, it might be permissible to state that food is taken with advantage at 6 a. m., 10 a. m., 1 p. m., 4 p. m., 8 p. m., and 10 p. m. The food should include, milk, lactose, eggs, well cooked rice, cream, custard, cocoa made with water, butter, chicken broth, occasionally egg nog or even ice cream.

LIQUID DIET IN TYPHOID.

6 a. m. Milk 7 ozs. cream 1 oz. Lactose $\frac{2}{3}$ oz.

8 a. m. Milk as above.

10 a. m. Albumen lemonade (white of 2 eggs and $\frac{1}{2}$ lemon, sugar $\frac{1}{2}$ oz. water to 8 ozs.).

12 noon. Milk as above. Custard.

2 p. m. Milk as above. Orangeade.

4 p. m. Milk or ice cream.

6 p. m. Albumen lemonade 8 ozs.

8 p. m. Milk, etc.

10 p. m. Milk, etc.

2 a. m. Albumen lemonade (if awake) 8 ozs.

This diet approximates 2,600 calories.

Additional may be taken 500 custard.

480 orangeade.

500 ice cream.

4,080 calories.

MIXED DIET IN TYPHOID.

6 a. m. Milk ozs. 6 with cream oz. 1, lactose drams 5.

8 a. m. One egg, sliced toast with butter, cup of coffee or tea, with 2 drams of lactose, and 1 oz. of cream.

10 a. m. Milk as at 6 a. m.

12 noon. Milk as at 10 a. m. eggs 1, helping of mashed potatoes, custard 4 ozs.; one slice of bread or toast, with butter, tea, coffee, or cocoa with cream and lactose.

2 p. m. Milk, lactose and cream.

3 p. m. Ice cream 4 ozs.

4 p. m. Milk, lactose and cream.

6 p. m. Eggs one (tea, coffee or cocoa or albumen lemonade) cereal 3 tablespoonfuls, with cream and sugar.

8 p. m. Milk, cream and lactose.

10 p. m. Milk, cream and lactose.

Medication.—The question of medication is largely a matter of the patient's symptomatic need. We have learned to follow the pulse and kidneys as two important elements in the ultimate outlook of the case.

A chronic alcoholic will doubtless require a certain amount of alcohol to meet his need, but we can secure even more satisfactory results by using caffeine citrate, digitalis, or sparteine sulphate when cardiac tone is lost. By improving our channels of elimination through the kidneys we free the blood of its over heavy burden of toxine, thereby reducing the cerebral irritation which is largely responsible for high temperature, and increased pulse rate. Water should be drunk in abundance, and the amount recorded.

Hydro-therapy has become so much a part of typhoid treatment that little need be said but a word of caution. The best results are secured from mild shock at a tempera-

ture which produces a sedative effect upon the whole nervous system, at the same time improving heart tone, reducing temperature, etc. The old tubbing practice has fortunately gone into disuse, and the bed bath take its place. See that it is carried out with all gentleness and good technique as a struggling patient in terror at this rather rigorous treatment is apt to rebel and more than offset the good obtained by the bath.

There are no antipyretics which I would recommend in typhoid.

As to intestinal antiseptics I have never secured any results which warranted the belief in lasting good from their use. One observation of the pathological typhoid ulcer will convince one that the infiltrated areas are beyond the reach of any local application even though the antiseptic could reach it in an effective form. Meteorism which probably alone calls for it can be partly overcome by turpentine stupes to the abdomen producing a gentle peristalsis of gut.

Vomiting frequently indicates too concentrated a food and calls for rest of the stomach. Diarrhea usually persists when large ulcers have not completely healed. It is well to remember that two to three movements per day do not call for active measures, as this is merely one way of locally eliminating toxines.

Constipation from the paralyzed gut is often more difficult to overcome than the diarrhea. Low enemas every second day of normal saline or soap suds are efficient and during convalescence I am using the Russian mineral oil at bed time and occasionally by rectum the night before.

Hemorrhages when slight call for no particular treatment, but when sufficient to alarm, morphine, adrenalin by hypodermic or supra-renal should be promptly administered.

Bed sores should be carefully avoided and if once started carefully cleansed and the usual astringents applied.

I would also urge particular care of the arterial system during convalescence. Phlebitis of the femoral is very common and is a lasting menace and discomfort to the sufferer. Two young men who recently went through comparatively mild cases of typhoid have been denied ordinary outdoor pursuits on account of the swollen leg which made elastic support necessary for even ordinary walking. The heart has had an extremely severe tax placed upon it, and no patient should be out of bed under two weeks after the temperature has become normal.

Remember also that the typhoid bacillus is carried in the urine and stools long after convalescence is established. Urotropin has had a good effect in clearing the urine of bacilli, but should be kept up until the laboratory report is favorable. Some epidemics of typhoid have proven more severe than others, but the same precautions must prevail at all times. The real success in treating typhoid is in the perfect cooperation between patient, nurse and doctor and having the three work as a unit.

113 West 78th Street.

The Danger of Phenol Vapor in Whooping Cough.—Another use of phenol we need to cut out (*Med. Council*) is in vapor form in the treatment of whooping cough. It rarely does good and often does harm, especially to the kidneys. It is foolish, at best, to close up the sleeping apartment of the sufferer in order to concentrate any vapor. What the child needs above all else is fresh air. The lamps sold to vaporize crude phenol, or rather carbolic acid, which contains cresol, and advertised in newspapers, are a delusion and a snare.

THE USE OF ANTI-TYPHOID INOCULATION AS A PREVENTIVE MEASURE.¹

BY

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New York.

During the past two years, I have had occasion to inoculate a considerable number of individuals with anti-typhoid vaccine, and Dr. Kellogg, the chairman of your programme committee, has suggested that a brief account of my experience might be of interest to the members of this society.

In May, 1912, Dr. Leslie H. Spooner of Boston, read a paper at a meeting in Washington at which I was present, in which he related his three years' experience with anti-typhoid inoculation of the nurses in a number of hospitals in Massachusetts. Spooner was led to employ this prophylactic measure because a study of the records of these hospitals had shown a typhoid morbidity rate among the nurses very much in excess of that in the population at large. In the Massachusetts General Hospital it appeared that during the ten years previous to 1909, from two to six of the nurses had come down annually with typhoid fever. Inoculation was, therefore, offered to the members of the training schools and was promptly accepted. As a result the incidence of typhoid has practically ceased among the nurses of the hospitals which have adopted the procedure. The reactions following the inoculations varied in severity but were, as a rule, very slight or moderate in character.

After hearing Dr. Spooner's paper, I returned to New York with the intention of having the nurses inoculated in Bellevue

¹Read before the New York Polyclinic Clinical Society.

and its allied hospitals. I had not expected to make the inoculations myself, but there seemed at the time to be no one else to do it. The work was begun in June, 1912, and since that time I have inoculated about five hundred nurses, as well as some seventy members of the visiting and house staffs and also about a dozen private patients. I was first inoculated myself by Dr. Charles Norris, the director of pathological laboratories of the hospitals. He used the vaccine of the United States army, giving as the first dose one-half c. c., containing 500,000,000 dead bacilli, followed at intervals of ten days with a second and a third dose of one c. c. each. After each inoculation, in my own case, the arm at the point of injection, was somewhat painful, tender and swollen for 36 to 48 hours, the tenderness and swelling extending up and down the arm for a few inches. The general reaction consisted of a fairly severe headache, pain in the back, and some malaise, these symptoms lasting for about 24 to 36 hours. After I had received the second inoculation, I proceeded to treat the nurses, using vaccine furnished by the Board of Health, of the same strength as that of the army. The inoculations were all given on the outer surface of the left arm, at the insertion of the deltoid muscle. The skin is sterilized with the tincture of iodine and the injections are made subcutaneously, not into the muscle. There have been very few severe reactions, these being more marked among the men than among the women. Not more than eight to ten nurses asked to be relieved from duty for a day, whereas several of the internes were laid up for as much as two days at a time, with temperature ranging as high as 102 degrees, with rapid pulse, nausea, vomiting, severe headache, and pain in the back.

There had been very little typhoid among the nurses in Bellevue, or any of the other hospitals in the department, so that there seemed to be no particular reason for giving the prophylactic inoculation, but I urged that it be done, not only to protect the nurses while on duty in the hospital, but as a general measure of precaution, especially as many of them were about to take their vacations in the country, where they would be exposed to infection from sources beyond their control. No compulsion was exercised, but the nurses were advised to undergo the inoculation for their own protection. The pupil nurses responded quite willingly, but some of the graduates, who come for short periods of post-graduate instruction and experience, begged to be excused.

As I had heard of the occasional lighting up of latent diseases, such as arthritis, I inquired particularly as to whether anything of the kind occurred in these cases, but so far as I could learn nothing of the sort was observed. I have recently been informed, however, that one nurse had something resembling articular rheumatism for ten days, followed by stiffness of the joints lasting several weeks.

It may be of interest to know that the reaction was the same in the cases that had had typhoid as among those who gave no history of the disease. When some of the nurses and some of the doctors suggested that, as they had had typhoid fever, perhaps it was not necessary for them to be inoculated, I replied that not only did that not imply that they could not have the disease again, but that also from a scientific standpoint, it would be interesting for them to receive the inoculation as "controls." It is, perhaps, needless to say that they were not par-

ticularly impressed with my suggestion, which did not seem to appeal to their scientific spirit, but they accepted the treatment just the same.

It is unfortunate that we must use the word "vaccine," as it gives rise to apprehension as well as misapprehension among the nurses. It calls to mind their experience with vaccination against smallpox, and they are much relieved when they learn that the operation consists of a simple hypodermic injection and that the amount of fluid injected is small. In the army, Russell employs the term "typhoid prophylactic," which has at least the advantage of not giving a wrong impression of the procedure itself.

Many of the nurses, while undergoing inoculation were in close attendance on cases of typhoid fever in the wards, and Wright's "negative phase" more than once passed through my mind and the fear that I might be exciting an increased susceptibility to the disease. Nothing happened, however, and the nurses are now protected. It is to be hoped, as claimed by Richardson and Spooner and Russell, that the danger of the negative phase of immunity said to follow bacterial inoculation has no substantial basis in fact, otherwise we might hesitate to make use of the procedure at a time when it would be of the most service, that is, in the presence of a local epidemic of the disease.

Some of the private patients who came to me for inoculation did so because they were about to go abroad, and feared that they might be infected by food or drink in the course of their travels. This argument is rather amusing when we consider that typhoid fever is much more prevalent with us than it is in European countries. A recent paper by Dr. Allen C. McLaughlin of

the United States Public Health and Marine Hospital Service shows that in the year 1910, in some 25 European cities there were 6.5 deaths in 100,000 population, whereas in this country in an equal number of cities of the same character, there were 25 deaths in the same number of population. In other words, there is four times as much typhoid fever in the cities of the United States as in those of Europe, and as we know there is more typhoid in the smaller towns and in the country districts than in the large cities, it would seem to be more reasonable for those who are about to spend their vacations in the country regions in the United States to be protected by inoculation than for those who are going abroad.

Many persons have wished to know the duration of immunity after inoculation, and I have usually replied "two or three years." Colonel Firth of the British army, quoted by Major Russell, concludes from his experience in India that immunity begins to diminish in about two and one-half years. In our army, according to Russell, it is the present practice to revaccinate against both smallpox and typhoid at the beginning of each three-year period of enlistment. Martha Wollstein, in a study on "The Duration of Immune Bodies in the Blood after Anti-typhoid Inoculation," found that these bodies reached their height within two months after the first inoculation and then fell rapidly within the next two months. Of nineteen cases under observation, the blood of fifteen was negative after thirteen months. Although as Dr. Wollstein states, experience has proved that clinical immunity cannot be determined absolutely by the measure of immune bodies in the blood, she nevertheless believes that reinoculation with typhoid vaccine within a year is in-

licated when exposure to typhoid fever is imminent. Russell, while noting the disappearance of agglutinins in little more than a year, adds, however, that they "are present as long after inoculation as after typhoid fever, which gives, as a rule, protection for life."

I have stated above that there had been very little typhoid among the nurses in Bellevue when the inoculation was begun, and an investigation proved that the number of cases was even less than we had supposed. Dr. Robert J. Carlisle, the attending physician to the school, and Miss Brink, the superintendent in immediate charge of the school, were good enough to go over the records for the twenty years previous to 1912, and were agreeably surprised to find that during that long period there had been but eleven cases of typhoid among the nurses in the hospital. Now let us see what has happened since June, 1912. Of the five hundred inoculated nurses not one has acquired the disease, whereas of those who refused inoculation, four have come down with it, one at Bellevue, one at Gouverneur, and two at Harlem. All of the four fortunately recovered, but one of them had a long and painful illness with complication and was incapacitated for months after it. Surely these results are something more than a coincidence. The figures for the internes are not quite so good, one doctor at Gouverneur having a mild attack of typhoid within a year of his inoculation.

When we undertook the inoculation of the nurses at Bellevue, it was practically unknown in the hospitals in and about New York. Now, however, I should judge that it is recognized as a desirable prophylactic measure in all of them. An inquiry a week ago of the superintendents of some half dozen hospitals in the city showed that in three, Mt. Sinai, St. Luke's and Roosevelt,

inoculation was compulsory; in three others, St. Vincent's, the German, and the New York, it was voluntary. As to the practice in the three latter institutions, the answer was "a few, or some, take it." There is no compulsion among the doctors and as a result only about one-half are inoculated. At Mt. Sinai the medical board is considering making the practice compulsory with every one in the hospital. At Bellevue, during the past year or two, Miss Noyes, the superintendent of the Training Schools, has requested the officers of the hospitals which send nurses for postgraduate instruction, to have them inoculated before they leave their schools, so that now nearly all of them are protected before they come under our jurisdiction.

In closing, I wish to refer to the great work of Major Russell in practically eliminating typhoid fever from the army. During the year 1913, there were only three cases of the disease with no deaths whatever in the whole American army at home and abroad, with a mean strength of ninety thousand men. His tables and charts show that the typhoid prophylactic as used in the army has given almost absolute protection against typhoid fever, and without any untoward effects of any character. It had been charged in certain quarters that the inoculation had been known to excite tuberculosis in soldiers previously free from the disease, but with possibly a latent predisposition to it. Russell seems to answer this charge satisfactorily by presenting a table showing that the rate for tuberculosis per thousand men has decreased from 4.39 in 1908 to 3.49 in 1912, a diminution of twenty per cent. during the past five years.

In my own limited experience I am happy to say that I have seen or heard of no case in which tuberculosis has developed after the use of the anti-typhoid vaccine.

ANTI-TYPHOID INOCULATION.

BY

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Anti-typhoid vaccine has been prepared and supplied, free of charge, to the public of this province by the Provincial Board of Health for the last few years. Our experience with this product and the results attained by its use in the British army in India, in the United States army and elsewhere, led the Board at the outset of the war to offer to supply all the vaccine required for the inoculation of the Canadian troops. This offer was accepted by the Federal government and about 75 per cent. of the first contingent of 33,000 men was inoculated before transportation to Great Britain. A large proportion of the second contingent, some 20,000 men, has been inoculated. The inoculation is not compulsory, either in the British or Canadian forces, but the refusals in the second contingent have been comparatively few.

The writer's experience with this inoculation has been limited to the treatment of some 5,000 men mobilized in the camp at Toronto during the present winter.

The dosage used was given in three separate inoculations of 250,000 bacteria for the first two doses and 500,000,000 for the third. The injection (1 c. c.) was made in the upper front part of the right chest just below the clavicle; the skin surface having been first painted with tincture of iodine. The interval between injections was five days.

The larger proportion of the men (numbering about 4,500) were inoculated in the month of December, and so far, (March 25th) the camp has been entirely free from typhoid fever with the exception of a single

case which showed ten days after enlistment and was almost certainly contracted elsewhere.

Any symptoms attributable to the vaccine were exhibited following the initial inoculation. The second and third treatments were invariably devoid of any disturbance. At the first day's inoculation about 1,100 men were treated. There was one case of vomiting soon after inoculation, which may or may not have been due to the treatment. Some five hours later about a dozen men complained of malaise, chilliness, headache and local pain. Of the first battalion inoculated, 37 men reported at sick parade next morning and of this number six had a temperature slightly over 100 degrees F.; four others had headache and malaise, but no rise of temperature. One had diarrhea without having had either constipation or diarrhea previous to inoculation; one had local pain only and another had several attacks of vomiting during the night. The remaining twenty-two complained of malaise, drowsiness or slight headache without any severe disturbance. One man had vomiting, diarrhea, headache and a temperature of 101½ degrees F. This man had been constipated and out of order for several days before. Two others reported later in the day complaining of severe headache. Of the total number of men inoculated the first day (1,100) four were detained in hospital the following day and of this number but one remained over night. In the second battalion, of about the same number of men, some fifty complained of headache, malaise or vomiting coming on within 18 hours. Thirteen of these were detained in hospital—these had stiffness of the muscles of the back, neck, or of the jaw or hands. Most of these had severe headache, slight chills, and malaise, but in none was there a tem-

perature of over 100 degrees F. Two men came into hospital in an unconscious condition with rigidity of the muscles. It was discovered later that their comrades had supplied them freely with whiskey. Of the thirteen who entered hospital one remained one day, another three days, and the remainder two days, when they were discharged in good condition.

From the third complement, of about 1,200 men, one man had active delirium and a temperature of 103 degrees F., after two days in hospital he was quite well. Three others were unconscious for two or three hours, but it is suspected that these had partaken liberally of intoxicants. A few others reported that they had vertigo, vomiting, nausea or chilliness twenty hours after inoculation but required no treatment.

In the balance of the 5,000 no untoward symptoms of any account were noticed.

It was observed that nervousness and fear of the treatment played a considerable part in the earlier inoculations. Several men fainted in the ranks before and an occasional one after treatment. These were placed in the "jack-knife" position and revived in a few minutes. In no case has there been any permanent disability, local abscess or serious result of any kind.

Exophthalmic Goiter in children is not a very common condition (*Pediatrics*) since it is much more usual at or just after adolescence and, of course, considerably more common in girls and young women than in youths. The first and chief essential in the treatment is mental and physical rest. A change of environment is also beneficial.

The "bitter pills" of life are swallowed to better effect if you take them as stimulants rather than as sedatives.—*Med. Fortnightly*.

A COMMON TYPE OF HEADACHE NOT DUE TO REFRACTIVE ERROR.

BY

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ington, D. C.

Imperfect refraction of the eyes is often the first thing thought of where headaches are frequent. While it is true that the strain of overcoming a refractive error does conduce to headache and that glasses will prevent this in many instances, yet such strain does not cause headache in all cases, and even when it does, there is frequently a constitutional disturbance as well which increases a person's susceptibility to the effects of the straining, so that even in these patients a general survey should be undertaken as well as the examination of the eyes.

Empirically we know that cases of headache which are not relieved by correction of refraction are very numerous; empirically we know also that these same cases are relieved by other measures which take no cognizance whatever of the innervation of the eye or of its refraction. Pathologically we know the role and causation in headache, of chronic meningitis, trigeminal dural neuralgia, increased tension within the pituitary fossa, infective foci in the cranium or the bones thereof or even in the mucous membranes without. Furthermore we know that headaches are produced not only by acute infections but by chronic toxic or exhaustion states such as malaria, syphilis, plumbism, secondary anemias, and even chronic fatigue. Lastly, and perhaps most frequently of all, headache is one of the symptoms of faulty metabolism, more especially that induced by hyperproteosis,

such as described by me previously, (*Monthly Cyclopaedia*, 1911; *W. Va. Medical Journal*, May, 1915, etc.)

We do not know the exact mechanism of this type of headache, but we are not certain of the exact mechanism of any headache, even that of eye strain. We do not even know whether the headache of hyperproteosis is due to the direct action of uneliminated proteins themselves, whether it is due to toxic substances elaborated by an overloaded liver, as our forebears used to think; whether it is due to simple putrefactive materials favored by intestinal stasis, as some surgeons would have us think; or whether it is due to an indirect effect of one or more of these factors upon circulation in the blood vessels themselves, or by their effect upon the passage of lymph, or even by modification of osmosis, such as we find in alcoholic wet brain and in the uremia of chronic nephritis, which may be seen as an exudate and papilledema even during life by inspection with the ophthalmoscope. We do know, however, that headaches of this kind, and this includes the chronic recurrent hereditary type known as migraine, can be either entirely prevented or tremendously alleviated by a proper regime, without any attention whatever to the refraction of the eyes. It is quite true that no such pretension is made in the text-books; but that is because the therapeutics of this type of headache will not be available until the publication of my paper on the subject to be given to the Southern Medical Association in November, 1915.
1705 N. Street.

THE OFFICE TREATMENT OF VARICOSE VEINS.

BY

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This preliminary report may appeal to two classes of readers, viz., the men who always operate and those who never do. The former know only too well that baffling adverse conditions sometimes ensure failure by such a complete victory over care and skill, that the cases that once gave the fairest sort of advance promises, may belie them in every detail after a lapse of two years. Herein is suggested the possibilities of an after-treatment which will enable one to control emergencies, to correct the beginnings of a post-operative deficiency, to "about face" a progressively poor result, and to convert a threatening disappointment into a happy outcome. Non-operative treatment is successful if it yields a temporary amelioration of annoying symptoms, yet the addition of the aforesaid method may so reinforce it that failure is inconceivable; inasmuch as the non-success of a first injection may be replaced by the fortunate termination of a second or other attack. In other words the method may aid a previous operation or may forestall and render unnecessary a proposed radical one, but it will not produce a fault in any after-coming surgical interference.

The literature of intravenous curative injections is prolix and accessible.

Quotations are omitted largely because the writer is such an admirer of the "blue pencil" that he has acquired a habit of skipping medical articles that are overburdened with history. The older methods gave good results in from 70% to 75% of the patients treated: but from seven to fourteen days in

Syphilis.—Certain cases of syphilis of the lung and syphilis of the glands have been recorded in illustration of the confusion with cases of tuberculosis.—*Exchange*.

bed was an essential demand. The enlarged elongated and superficial veins between the knee and the ankle produce changes in the skin, inflammation and pain, and most severely handicap their owner in his daily labors. These may be cured without absence from business, loss of time in bed or loss of the services of a hospital bed. The field may be small but it is neither trifling nor unimportant. The statistician may estimate for himself the loss, in dollars and services, entailed upon our city by laborers, housewives, and shopgirls who are dragging around the ball and chain conditions entailed by diseased veins and their sequelae. It would, however, take a brilliant political economist to put the facts more forcibly than one poor old colored woman did, at my clinic. She said, "I went from hospital to hospital for ten years and once in a while I could do a week's work and then everything began all over again and slowed me down so that I couldn't move fast enough to cook for the men. I worked round racing stables where a thousand dollar horse with one bad leg was worth five dollars for his hide and five for his meat to feed the lions in the circus. But my hide had a big hole in it (the ulcer) and I used to wish the law would let my husband sell my carcass for lion's food and end it all. But all I was good for, to anybody, was just something to swear at." She now earns \$30 and her expenses per month, with steady employment. Rather a decided difference in one person's share of the "world's work."

Acetic acid will close a vein promptly but its injection is very painful for from two to five minutes. The vein may die and slough out but this is really not an alarming matter. The blood vessel is destroyed that is all, and the end sought for is accomplished but not in the easiest way.

Shuford's solution has been widely used for years to destroy and remove piles. The idea is not so much to form a blood clot as to produce an adhesion of the wall of the cavity into which it is injected. Perhaps the term soft desiccation describes the process, but slough does not.

Consequently the injection of 5 minims or less of the aforesaid solution, followed immediately by the application of a pressure pad which forces the walls of the veins in contact, should convert that contact into an adhesion if the pad is held firmly in place, for a week, by a strap of adhesive plaster. Finally, leg, pad and all should be snugly bandaged with one of those webbing affairs and the patient instructed in its application and removal. The pad and adhesive plaster are never to be disturbed by the patient under any circumstances, nor the site of the injection uncovered.

Shuford's solution is borax, acid salicyl aa*ʒi*, acid carbol *ʒiii*, glycerin ad. *ʒi*. The technique of its use, while simple, requires such close attention to the minutest detail that it is best to devote another paper solely to that subject. He who interferes with the usual progress of varicose veins, from bad to worse, may be said to be playing with fire and gunpowder; but the writer has a technique which after much experience has done good work without at the same time giving rise to anxiety.

Nasal Abnormality.—A form of nasal abnormality, which is a prolific source of catarrhal middle-ear deafness, is the bony spur situated far back in the nasal cavity. This spur appears as a pointed or conical projection, opposite the posterior part of the inferior turbinate; frequently it comes into view only during the ischemic effect of an application of cocain and adrenalin.—*Med. Times.*



MODERN REMEDIES

• Edited by Dr. J. W. Wainwright.

Belladonna in the Treatment of Incontinence of Urine in Children.—J. W. Simpson (*Edinburg Medical Journal*), has recently declared that drug treatment must be according to the condition of the urine. If the urine be negative, the treatment should consist of tonics to improve the child's general condition. When this has been accomplished, belladonna should be given beginning with ten minim doses of the tincture two or three times a day, gradually increasing to twenty to twenty-five minims. If the urine is very acid it must be reduced with citrate of potassium in doses of ten grains three times daily, or larger quantities if required, to be followed by five or ten grain doses of urotropin; this by the tincture of belladonna. When the child's general health is not good, strychnine may be added. Meats should be forbidden when the urine is acid. When the urine is alkaline, dieting is of the greatest importance; all carbohydrates should be prohibited. When the alkalinity has been corrected, belladonna should be used in the same manner and dose as above. In cases of mixed infection, salol will be indicated. These latter cases are apt to prove troublesome, in which event, vaccine therapy may be resorted to.

this form of treatment. Clinically the characteristics of malignant tumors are induration, intractable cystitis and sloughing or ulceration. Multiplicity and size of tumor are barriers against the successful treatment. A careful selection should be made upon which cases are to be subjected to desiccation and which to operative measures. If there are more than two or three tumors in the bladder, there will be a tendency to relapse and in such cases careful attention should be given the case after apparent cure. For two weeks succeeding each treatment the patient should be under observation to guard against infection or hemorrhage. Cures should be verified by the cystoscope three months after apparent cure and again in one year, and continued thereafter at periods of three years.

Fulguration Treatment of Bladder Tumors.—J. T. Geraghty (*Surgery, Gynecology and Obstetrics*, August, 1915), gives the results of his experience in this form of treatment as follows: Only in tumors which were papillomatous has fulguration succeeded in their destruction. And this has been possible in both benign and papillomata. Response to treatment, however, in the benign as compared with the malignant variety proved of interest. Where the tumors were cystoscopically and histologically benign, the rapidity of disappearance was frequently astonishing. When, however, the papillomata are malignant response to fulguration may be exceedingly slow and discouraging. When the histological picture shows distinct malignancy, one may almost positively predict response to fulguration extremely slow. Occasionally a small malignant papilloma

Desiccation Treatment of Bladder Tumors.—E. L. Keyes, Jr. (*Surgery, Gynecology and Obstetrics*, August, 1915), gives a summary of his views on the treatment of bladder tumors by the desiccation method as follows: Tumors of this character must be classified as benign or malignant in accordance with their clinical characteristics, especially as to their reaction to

will require greater persistency of treatment than would have been necessary for destruction of one benign and of equal size. Geraghty reports one case with multiple malignant papilloma covering the left lateral wall of the bladder and the growths so fused at their surfaces, that it seemed reasonable to suppose it to be one tumor; seventy-five treatments covering a period of nine months, were necessary to eradicate the growths. No radical operation could in this case have given as complete a result. In the papillary carcinoma or sessile tumors when infiltration of the base is always present, eradication by this method of treatment is not successful although considerable symptomatic relief may at times be obtained.

Sodium Bicarbonate in Hay Fever.—

K. E. Kellogg, (*New York Medical Journal*), writes that acting on the theory that the symptoms of hay fever are due to a general acidosis, he has been treating the complaint with large doses of sodium bicarbonate, one dram three times a day. Reviewing his records he finds that 90 per cent. of his patients experienced marked amelioration of symptoms, and 70 per cent. complete relief after a few days' treatment. The remaining 10 per cent. were not as fully benefitted, although they showed some improvement.

Typhoid Vaccines.—In an article under Medical and Surgical Progress (*Interstate Medical Journal*, October, 1915), wherein a large number of references to current medical literature are noted on the subject of typhoid vaccines, the following general conclusions are arrived at:—the production of antibodies or protective substances, in response to the inoculation of a vaccine, follows definite fixed laws, regardless of whether the vaccine is given for prophylactic or curative purposes, and the results in treatment must be interpreted in the light of what is known of these laws.

Inoculations of vaccine in typhoid fever prevent relapses and lessen complications, and in some cases probably also shorten the original attack. Stock vaccines should be given in preference to autogenous vaccines in typhoid. The older the culture the better.

When given in therapeutic doses, such stock vaccines are without injurious effect, and do not interfere with other treatment. The routine treatment should be continued until the fever process is controlled by the vaccines. The dosage used by many of those who have treated typhoid with vaccines in the past, has been too small to secure the best possible results. Every case of typhoid should receive vaccine treatment as soon as the diagnosis is made, and should be continued until the temperature becomes normal or it is demonstrated that the case will not respond to this form of treatment.

The Caramel Cure in Diabetes.—Umber (*Deutsche Med. Wochenschrift*, 1915, No. 7), reports on caramel as a suitable and useful article of diet for diabetics. It can be given in considerable quantities without increasing the excretion of sugar in the urine, while it is a valuable nutritive. In advanced cases of diabetes, it may replace the oatmeal cure, being given alone or with vegetables, fat and eggs. It must be carefully and accurately prepared, which facts limit its use to the most intelligent households. It is made by heating cane sugar in an aluminum pan for from thirty to forty-five minutes. The temperature must be at least 200° C., or the sugar will not be converted, but care must also be taken that the temperature does not exceed 220° C. or toxic products arise.

A Powdered Mercury for External Uses.—Unna, (*Dermatologische Wochenschrift*, 1915, No. 14), reports a new method of making a powdered mercury to take the place of the unguentum in common use. He finds fault with the ointment as the extinction of the metallic mercury is not accomplished. He found that this was accomplished when lycopodium is rubbed with old oil of turpentine. When the mercury comes into contact with this mixture a dry yellowish-gray powder results, in which the mercury is very finely divided. A little trituration produces a powder in which mercury cannot be seen under the microscope.

This powder may be made into an ointment, or better, it may be rubbed directly

into the skin with a ball of cotton. Much rubbing does not seem necessary. The powder may be dusted over chancres, ulcerated gumma or syphilides. It is also very effective in pediculosis.

Adrenalin in Asthma.—Hertz (*British Medical Journal*), reports the use of 3 minims of a 1 to 1000 solution of adrenalin chloride in asthma with remarkable results. He used it himself and noted that within a minute his breathing became easier and less noisy, but that he was extremely uncomfortable, his pulse becoming rapid and his hands tremulous. In five minutes the paroxysm was over and breathing absolutely quiet. The unpleasant symptoms, however, remained for an additional ten or fifteen minutes when he went to sleep. On the appearance of a paroxysm he took two minims of the adrenalin solution with equally good effect regarding the breathing, but with less discomfort and tachycardia; since which time he has used but one minim or even half a minim for the less severe attacks, and one and a half minims for severe attacks. Complete relief from the asthma always occurs within five minutes, and the small doses produce no objectionable symptoms.

The Effects of Remedies in Heart Disease in Childhood.—In discussing the effects of remedial agents in heart diseases in childhood, Dr. Henry E. Tuley (*Pediatrics*, September, 1915), states that during the acute febrile stage, the patient should be entirely recumbent; that the application of an ice bag will be most beneficial, kept on half an hour and off the same time. In pericarditis it relieves dyspnea and pain. He cautions against the indiscriminate and routine use of strychnia in heart and other conditions. There is no logical basis for its use as a cardiovascular stimulant as it neither increases the output from the heart, slows the pulse or raises blood pressure.

The use of the salicylic preparations for children subject to joint pains, however vague, is commended. The so-called growing pains of children should always, he states, be taken seriously and the child

closely watched for other rheumatic manifestations, and salicylatis given as soon as the diagnosis is clear.

Tuley declares that children respond readily to digitalis and strophanthus in moderately small doses. But that either should be reserved until the first sign of failing or ruptured compensation is noted. Digitalis should not be indiscriminately given.

Diet and digestion are of great importance while the condition of the bowels should be closely watched. A distended abdomen with gas is a great detriment in endocardial or myocardial trouble.

Sulphuric Acid in Typhoid.—Broadbent, (*British Medical Journal*), advises an ice bag, suspended from a cradle placed over the lower portion of the abdomen in typhoid cases, with only a piece of gauze intervening between the ice bag and the skin in order that the cold may penetrate as deeply as possible. He advises the following prescription:

Quinine sulphate.....	grs. ii
Acid sulphuric del.....	min. iv
Mercury bichloride	gr. $\frac{1}{32}$
Aqua	oz. $\frac{1}{2}$

To be given every four hours, half an hour before meals.

In cases with pronounced diarrhea he increases the amount of sulphuric acid, while if constipation supervenes he adds magnesium sulphate sufficient to secure one or two stools. Broadbent believes that sulphuric acid not only corrects diarrhea but tends to lessen the danger of hemorrhage.

Atropin in Gastric Disturbances.—Pletnew (*Therapie Monatschrift*), states that atropin is peculiarly useful in gastric disturbances. It promptly checks secretions; markedly reduces acidity in hyperchlorhydria; diminishes pylorospasm, relieving the pain and distress. Morphine is contraindicated in gastric disturbances as its use is followed by increased secretion; with atropin, however, these untoward effects are not in evidence.

RATIONAL ORGANOOTHERAPY

Conducted under the editorial direction of Dr. Henry R. Harrower.

Organotherapy in Drug and Alcoholic Addicts.—There is an excellent opportunity to apply organotherapy in this special field. The results are encouraging and the prospect is an alluring one. The first and one of the most serious disturbances which results from the use of alcohol (and many of the narcotic drugs) is reflected in the work of the digestive tract. Not only are the stomach and bowels irritated and inflamed as a result of the stuff put into them, but the liver in its role of protector of the body, is seriously embarrassed, and becomes more or less diseased.

Where these alimentary disturbances are still in their functional stage, removal of the cause may with much advantage be associated with the use of secretin, for this internal secretion of the duodenal wall exerts a valuable and physiologic stimulating effect upon all the organs mentioned above. The writer's attention has been called to several cases in which this form of treatment has brought about almost spectacular results in severe functional alcoholic gastritis and those that have been under treatment with secretin have secured very tangible and encouraging results.

Since nutrition, equally with treatment, plays such an important part in the reaction of the body to disease, it seems perfectly rational to make a special effort to reestablish the disturbed functions of the digestive organs and while this is but a part of the treatment, it is an extremely useful adjunct to other procedures which may be in order.

Another point is worthy of mention: there cannot but be pluriglandular insufficiency of a more or less marked degree in these cases. The dire changes resulting from the prolonged use of alcohol and narcotics are not limited to the digestive and nervous systems, but as in neurasthenia and

other run-down conditions, the ductless glands which produce the all-essential hormones, are prevented from doing their proper share of work and consequently there obtains a condition which has been termed "hypocrinism" or, probably, more correctly, "hypoendocrinism," which is undoubtedly a prominent cause of the pronounced asthenia which results from the withdrawal of alcohol and other narcotics. This responds very frequently to homostimulative organotherapy,¹ and small doses of the tonic principles from the thyroid and pituitary (and in many cases, the sex glands) will promptly benefit such conditions in a marked degree, and this benefit will cause a considerable increase in the responsiveness of the system to such other treatment as may be indicated.

Looking at the matter from various angles it seems that organotherapy may be used with decided advantage as an adjunct in the treatment of alcoholic and narcotic habits, and those who happen to devote their energies in the treatment of this special class of cases, can with advantage consider the relation of the hormones to both the cause and cure of these conditions.

Adrenalin in Spotted Fever.—Recently quite an interesting report on this subject appeared in the *Medical Record* (October 2, 1915, page 586) by M. H. Smith, Basin Wyo., and it is a pleasure to print here a

¹ The term "homostimulative organotherapy" is explained more fully in another paragraph ("The Four Fundamental Forms of Organotherapy") in this issue. Incidentally this subject is referred to more fully in the item "The Essential Basis of Organotherapy," *AMERICAN MEDICINE*, Apr., 1915, p. 253, and in "The Internal Secretions in 'Run-down' Conditions," Aug., 1915, p. 639.

very brief resumé of the experience of this writer which was kindly sent to the conductor of this department for publication here. Incidentally, it would be a pleasure to hear from our other readers who have personal experiences or suitable ideas which might with advantage be included in these columns.

Dr. Smith's conclusions follow:—"In a series of three cases of Rocky Mountain spotted fever treated with adrenalin in doses approximating ten drops every four hours, administration being *per orem*, the eruption was markedly limited and controlled in type and general appearance. Prostration was absent, convalescence established earlier than common, apparently there being a general modification of the disease as a result of the remedy. Within a few minutes after the administration of each dose of adrenalin, a fulness of the pulse and a fading of the eruption would be noticeable."

Suggestions Regarding Pituitary Medication in Labor.—The wide use that is being made of the various solutions of the active principle of the infundibulum in obstetrical practice, is causing much interest among medical writers, and scores of papers and reports embodying many and varied clinical experiences are now on record in the literature. It is interesting to note that more than 95% of them are in favor of the use of this remarkable remedy.

In one of these recent communications, Macfarlane (*Glasgow Med. Jour.*, Sept., 1915) makes several suggestions of a practical nature which have not been emphasized as much as they deserve. As usual Macfarlane finds that the best results follow the use of the drug in the second stage of labor. He urges that when the uterus is exhausted, *it should be allowed to rest* before the injection of pituitary is given. Small doses, one half a cubic centimeter or less, frequently repeated, are most desirable.

Occasionally one meets cases manifesting a slightly greater degree of hemorrhage than is usual following the expulsion of the placenta. This is most satisfactorily controlled by a small injection of pituitary, and in anticipation of this hemorrhage it is suggested that a prophylactic injection of a half

cubic centimeter be given *after* delivery, but before the placenta has appeared.

The use of chloroform during expulsion reduces the severity of the uterine contractions brought about by pituitary injections, but does not seem to lessen their frequency.

The principal contraindications to this treatment, besides the generally accepted conditions of marked pelvic contraction, rigid cervix, severe arteriosclerosis, etc., according to Macfarlane should also include chronic renal disease, severe anemias and marked obesity, in the presence of which sudden blanching and faintness may follow the injections.

Adrenalin for Severe Hiccough.—There is almost no end to the empirical possibilities of the three best-known organotherapeutic remedies—thyroid, pituitary and adrenal. Frequently in the literature one runs across the report of an experience which is suggestive even though it may not be convincing. Here is one of them:

Segal, in the *Journal des Praticiens* (Paris) (abs. in *Med. Record*, Oct. 16, 1915), tells of a case of hiccough that had lasted for eleven days. It began three days after a severe attack of renal colic. The usual sedative measures were applied and large doses of bromides, chloral, cocaine and even chloroform were given without relief. The patient suffered much distress and pain, because of the violence of the hiccough.

Finally adrenalin was given in a dose of 10 drops of a 1-1000 solution, when the hiccough immediately became less frequent and on a repetition of the dose, ceased entirely and did not recur.

It is not stated whether the adrenalin was given by the mouth or hypodermically. Probably the latter. In any event such results are decidedly interesting, even though we may not always expect such a rapid and complete cure in every case thus treated.

Some Remarks on Adrenal Nomenclature.—Some of the terms used in the literature of endocrinology and organotherapy are quite confusing. The exigencies of trade complicate them, as the coined "trade name," which not only identi-

fies a certain product but automatically and permanently connects it with its manufacturers, cannot be dispensed with—by the manufacturers, at least.

Most complex of all is the nomenclature of the adrenal principle and products. The substance extracted from the adrenal medulla is called variously epinephrin, adrenalin (Parke, Davis & Co.), epinine—synthetic (Burroughs, Wellcome & Co.), hemisine (B. W. & Co.), paraneprhin (Merck & Co.), suprarenalin (Armour & Co.), suprarenin (Meister, Lucius & Brunig), vasoconstrictine (Duncan, Flockhart & Co.) and adrenin.

The first term, "epinephrin," was given by Abel to what he supposed was the adrenal active principle, and which was later found to be a monobenzoyl derivative of this principle. This term is used practically exclusively in the *Journal of the American Medical Association*, since the Council on Pharmacy and Chemistry believe it to be the most suitable word. Unfortunately the *Journal* frequently reports works done with adrenalin or other similar products, with the word "epinephrin."

All the other terms in the foregoing list, with the single exception of the last—adrenin—are proprietary names, and the reporter or editor, in fairness to readers and manufacturers, should use the proper name of the product that has been actually used.

In Cannon's recent book (*Bodily Changes in Pain, Hunger, Fear and Rage*) as well as in his numerous writings, the word "adrenin" is used exclusively and his explanation as found in the following quotation on page 36: "'Epinephrin' and 'adrenin' have been suggested as terms free from commercial suggestions. As *adrenin* is shorter and more clearly related to the common adjectival form, *adrenal*, I have followed Schafer in using *adrenin* to designate the substance produced physiologically by the adrenal glands."

We propose to do the same in this department, save only where the reference is not to the active principle itself; but to some special preparation of it, in which case why should not we call it by its proper name?

Just What are "Animal Extracts?"—

This question, suddenly put to the writer re-

cently, clearly indicated that not every physician knows what these organotherapeutic "extracts" are, and on thinking about the matter it seems to be worthy of a brief note here.

The majority of the "animal extracts" are not "extracts" at all. They consist of the fresh glands (from which as much as possible of the fat, connective tissue, and extraneous substances, have been removed) dried and powdered. "Thyroid extract," for example, is nothing more than desiccated sheep's thyroids, standardized to contain a definite minimum (0.2%) of organically combined iodine, in harmony with the U. S. and other Pharmacopoeias.

Occasionally glycerine is used to separate certain principles and, in such cases, the product is really an "extract." Secretin-bearing products are a good example of this as maceration of the duodenal mucous membrane with physiologic HCl solution and glycerine, may be a part of the manufacturing process.

The principles of the adrenal medulla and posterior pituitary body are also in a class by themselves and, as is well known, consist of solutions of substances chemically prepared from the fresh glands and dissolved in a suitable menstruum.

A Warning About Dosage.—In this connection a warning may be given to those who use thyroid preparations and with it may be coupled a suggestion to manufacturing chemists to standardize their labels and thus make the matter of dosage more simple and convenient.

For example the best known "animal extract"—thyroid—is put out in tablets of varying dosage, the contents of which are indicated on the label in three ways: (1) 5 grain tablets, (2) 5 grain tablets, each tablet representing 3 grains of active dried thyroid substance, and (3) tablets representing 5 grains of *fresh* thyroid glands, etc.

Now the figures given above are merely for convenience—5 grain tablets of thyroid are not used so much these days—and it will be clear that the tablets numbered (1) cannot contain 5 grains of the remedy for it is not possible to manufacture 5 grain tablets containing no excipient to bind the thyroid substance together or to make it dis-

integrate easily. The second enumeration (2) is as it should be, for the size of the tablet is for manufacturing convenience while the amount of its active therapeutic constituent is definitely stated. Regarding the third it is difficult to know why a firm should insist on denoting the amount of *fresh substance*, rather than the standard (U. S. P. in this particular instance) preparation of dried gland.

This may be the cause of considerable trouble. For instance a physician is giving thyroid extract (P., D. & Co.) 5 grains at a dose. For some reason or another the treatment is continued with a B., W. & Co. preparation, but he does not notice that the "Tabloid Thyroid Gland Gr. 5" represents fresh substance, or only one-fifth as much of the dried gland as had been previously given.

In this connection it may be of interest to remark that this firm puts out a "Tabloid Thyroid Gland Gr. 1/10" which contains only 1/50 of a grain of the dried thyroid gland!

The same holds good in several other instances. Corpus luteum is a good example. Some makers offer it in 5 grain tablets (containing, of course, less than 5 grains of the luteal substance), others in 5 grain capsules, and still others state that "each tablet represents 20 grains of fresh substance," the size of the tablet or the amount of dried corpus luteum being left to the imagination. It happens that according to Choay ("Des Extraits Opothérapiques: Modes de Préparation, Rendements, Posologie") fresh corpus luteum substance is reduced in the manufacturing process between 75 and 80 per cent. and hence "20 grains of fresh substance" would approximate 4 grains of dried luteal substance.

These remarks show that while organotherapy may be advancing with great rapidity, there still remains something to be done to facilitate its more convenient application.

The Internal Secretions and Sterility.—

The glands of internal secretion have such an intimate control of such widely differing functions, that whenever one is confronted with a seemingly inexplicable occurrence in pathological physiology, it is very easy to lean to the idea that the ductless glands

may in some way be responsible for the trouble and, therefore, that organotherapy *might* be of possible assistance. This is, of course, rank empiricism, and is not looked on with favor from all sides; nevertheless it is thus that progress is made. There is sufficient satisfaction from the almost unexpected results that one occasionally finds, to counterbalance the side remarks of those who "don't believe in that kind of practice."

Among many such puzzling conditions that confront the practitioner from time to time, is sterility with no discoverable cause. In such cases it is well to remember that there are others who have "imagined" that the thyroid, pituitary or others of the ductless glands might be at fault; or that empirical thyroid, pituitary or pluriglandular organotherapy might be useful.

Clinically the results of these measures are sufficiently encouraging to make them worth trying more frequently, even though they are by no means constant. There are a number of references to the value of thyroid therapy in sterility and in the discussion of a paper on the prognosis of sterility read at the American Medical Association, June, 1915, DeLee of Chicago made the following statement: (*Jour. A. M. A.*, Oct. 2, 1915, p. 1156).

"Another point that will explain some of the causes of sterility is the abnormality of the internal secretions. I hesitate to make that statement because it throws us into an immense field that is very dimly lighted by positive knowledge. (The light is increasing rapidly, and we are trying to hold it as high as we can.—H. R. H.), but I do know cases that have been unsuccessfully treated elsewhere and have been successfully treated by the glands of internal secretion—thyroid and other extracts. In some instances administration of these preparations has been followed by impregnation, especially that type of firm, fat obesity in which the women are round and plump, and the fat is hard, almost like firm flesh, and the periods are inclined to be irregular and small in amount. Those cases have responded to combined treatment occasionally."

Some years ago Weil (*Munch. med. Wochenschr.*, Oct. 15, 1912) suggested that in certain cases of sterility the cause of the condition might lie in a lack of correlation of function between the ovaries and the thyroid gland. It is well established that

during menstruation and pregnancy the thyroid swells, while in castrates the thyroid is very frequently atrophic. Hence thyroid extract reasonably may be expected to be of some service. Weil reports three cases of apparently permanent sterility in which the administration of thyroid extract was followed by conception, and states that there appears to be no doubt that the thyroid principle, artificially supplied, determined a physiological congestion of the ovaries, which promoted conception.

Points in Weight Reduction.—In a very carefully prepared communication on this subject, R. H. Rose (*New York Med. Jour.*, October 9, 1915, p. 756) classifies obesity for convenience under two heads: 1. Constitutional, chiefly due to hypothyroidism; 2. Cases due to overeating.

While nine-tenths of the paper concerns the second class and there is a full consideration of the dietetic management, some points regarding the use of thyroid extract may be reprinted here with advantage:

"Patients with hypothyroidism should be given thyroid extract, one grain daily, with subsequent increase in the dose until sufficient is administered to control the symptoms. Tablets should be dispensed, because it is not safe to allow patients to use their own judgment regarding the dose, as many will do if a prescription is given.

"In conjunction with thyroid treatment, a diet should be used which is lower than a maintenance diet. It must be borne in mind that thyroid extract reduces weight only by increasing metabolism. If, therefore, enough thyroid is given to reduce the weight of one who is overeating, it can be done only by increasing metabolism to such a degree that it will be harmful to the patient. Therefore, in the use of thyroid, the dose should be regulated by the symptoms of hypothyroidism and not by the amount of adipose tissue."

Too often thyroid is given in obesity in a "hit or miss" fashion and the large and irregular dosage frequently does more harm than good. The last sentence quoted above has a particularly important message that cannot be repeated too often.

Luteum Extract in Menstrual Disorders.—In a paper on this subject read before the American Association of Obstetricians and Gynecologists, (Pittsburgh, Sept. 14-16, 1915) Leighton, of Portland, Me., made some helpful remarks about the conditions in which luteal therapy is indicated.

Not all cases of dysmenorrhea are due to deficient action of the natural corpus luteum; in fact the cases which may be traced to ovarian deficiency are probably in the minority. One must not allow the etiologic value of some single factor to overshadow others of equal importance. Surgery has not been superseded by organotherapy and there are still some "serious drawbacks to the use of corpus luteum."

It is interesting to note that the first of these "drawbacks" is the fact that corpus luteum must be used routinely or continuously to obtain and maintain results; and since its action is cumulative rather than immediate, patients and physicians "too often discard its use after a short trial if it has been unproductive of good results."

Leighton suggests that 15 to 30 grains a day is sufficient dose. Its prolonged administration does not bring about untoward disturbances, with the possible exception of slight inconvenience in rare cases. "While it is sometimes difficult to recognize and identify cases which would be benefited by corpus luteum, yet when there is a possibility of ovarian deficiency being an etiologic factor in any gynecologic disorder, we owe it to the patient to make use of this remedial agency, for its value is well determined."

Collapse in Typhoid Fever.—Aubertin and Chabanier (*Presse méd.*, Mar. 18, 1915) treat typhoid collapse in military practice with massive injections of camphorated oil, of sparteine or of saline solution containing adrenalin. They also give alcohol rubs and hot packs. They obtained recovery in every reported case.

As a prophylactic in typhoid, the same writers give 20 minims of adrenalin solution per day as a part of the routine treatment and insist that it has "real value."

THE ANNOTATOR

Dangers that Lurk in the Handling of Foods.—The old saying "where ignorance is bliss, 'tis folly to be wise" applies with particular force to the foods we eat with gusto in our hotels, clubs, restaurants, dining cars, and public eating places in general, for if we knew the conditions that all too often exist, or the state of health of many of those who prepare and



handle our most delectable viands, it is more than probable that our appetites would rapidly wane. Certainly it is not calculated to increase one's enjoyment of a favorite dish to learn that it was prepared by a consumptive chef or served by a waiter suffering from venereal disease. The affront to one's ideas of decency and cleanliness is bad enough, even if the actual menace of infection was not so real. But the handling of foods by cooks or waiters who are afflicted with infectious diseases presents dangers of such a serious and far reaching character that no one can contemplate the proposition in its practical aspects without realizing its gravity.

Fortunately our health authorities have recognized the importance of the problem for some time, and in many of our large cities special ordinances have been passed with the object of reducing the dangers to the lowest possible point. The Health Department of New York City has been particularly active in safeguarding our food supply, and in enforcing recent laws to the effect that no person employed in preparing or serving food stuffs shall be allowed to continue in such employment without a certificate showing him, or her, to be free from communicable disease, have been conducting a thorough physical examination of cooks and waiters. This has proven a pro-

digious undertaking for there are something like ninety thousand cooks and waiters engaged in the forty-five hundred public eating places in New York City.

The importance of these examinations cannot be overestimated, for the elimination of infected individuals and disease-carriers is bound to decrease the liability of food contamination very materially.

Of the 15,000 physical examinations of cooks and waiters already made or in progress, more than 6,000 have been made by private physicians. This has been found necessary to expedite matters and because the tax on the official examiners of the department was too great. At present about 85 private physicians have received authorization from the department to engage in this work. The special object of these examinations is to discover evidence of tuberculosis, venereal disease, a past history of, or exposure to typhoid fever, as well as evidence of any other infectious disease in a communicable form. Medical examiners are required to strip the applicant to the waist and carefully inspect the hair, skin and visible mucous membranes and to make a careful physical examination of the lungs. Whenever the presence of any of the above mentioned diseases is suspected, the private physician is expected to obtain material for Wassermann or Widal tests or for microscopic examination, to help establish the diagnosis. Special stress is laid upon the necessity of an inquiry regarding a previous typhoid infection or of exposure to a case of typhoid fever. By this means and by the aid of high dilution Widal tests performed at the department laboratory, it is hoped to discover typhoid bacillus carriers who may be present in the ranks of this group of food handlers. Already ten suspected typhoid bacillus carriers have been discovered by the aid of this test, thus estab-

lishing its value. While precise figures cannot be obtained, syphilis and tuberculosis have also been found frequently enough to justify this work. The laboratory of the Health Department will perform the necessary tests upon all the specimens that are promptly and properly forwarded to it. Wherever the physical condition of an applicant for examination occasions doubt in the mind of the examiner as to the presence of an infectious disease, the case must be referred to the Health Department, which will assume the final responsibility for the issuance or denial of certificates.

It is work of this kind, carried out intelligently and systematically, that is helping to make New York City one of the healthiest places in which to live. Certainly knowledge of the aggressive execution of the ordinances against food contamination by our Health Department will add new relish to the food that is placed before us in our public dining places.

Neurasthenia in Wall Street.—The conditions which dominate Wall Street at the present time conspire to make it, more than ever, a predisposing cause of neurasthenia. It is not so much the speculators with large financial interests at stake who feel the stress of the life and whose nerves are racked as they watch the rapid upward or downward rush of the securities in which they are interested and see their fortunes increase or melt away as prices go up or go down. It is rather the men who work in connection with the stock exchange—the brokers and their clerks who have been subjected for the last few months to the unceasing strain of exceptionally busy days, and a volume of business that has increased three hundred per cent. over that done last year.

The general public has but a vague idea of what a "million share day" means to the brokerage houses in the way of rush and nervous pressure, but a large number of physicians have been gaining a significant insight into its meaning through the cases which have been coming into their hands for treatment. All of these show marked

symptoms of real neurasthenia. The characteristic tight band around the forehead, the irritable nervous system, the unstable vasomotor mechanism, the utter weariness combined with the disordered memory and the disordered digestion, the flabbiness of hitherto firm muscles and the abnormal excretion of phosphates, all point unmistakably to the correctness of the diagnosis.

When one considers the conditions under which work has been done in the brokerage houses since the summer, it is easy to account for what might almost be regarded as an epidemic of neurasthenia. The phrase is not so far fetched as might appear at first sight, although it is naturally associated with the crudescence of germ diseases. In the latter case, the presence of an abnormal number of germs in the conveying medium causes the infection of an abnormal number of people, while in the case of Wall Street, it is the action of an abnormal condition of things, acting over a stated time, which has broken down the nervous resistance of so many people at the same time.

As Polonius so succinctly phrases it, "Each effect defective comes from cause," and any physician, intimately acquainted with Wall Street life, arguing from cause to effect might easily have foretold what was going to happen. In the rush of the day's work, the clerks have had no time to go out and get a satisfactory lunch. It is a case of a sandwich and a cup of tea or coffee, taken at their desks, while doing their work. Their employers have been no better off, for a large number of brokers on the floor of the exchange have been constrained to content themselves with a sandwich while standing in the crowd waiting to execute any orders that may be sent to them from their office. That their action is no counsel of perfection or of over-zealousness is manifested by the experience of one broker on a very busy day. Feeling the need of something more satisfactory than a sandwich, he rushed to a neighboring buffet to get a bowl of clam chowder. He was gone about seven or eight minutes. When he returned, he found that he had been wanted by his house to execute an order on ten thousand shares of stock, the commission on which amounted to \$1,250. Not being able to find him, the business had to be given to another firm. "Well," said the broker when he was told of the circumstances, "that bowl of clam chow-



der is the most expensive soup I've ever eaten in my life."

Unsatisfactory as such hurried meals are, they become infinitely more unsatisfactory, when, through the influence of the conscious mind being obsessed with the hurry and bustle going on around it, the process of mastication is unconsciously affected and the food is bolted without anything like its proper degree of ensalivation. Again, although the exchange closes at three o'clock, the work entailed during the five hours of its session has been so great lately, that instead of getting through by five or six o'clock, the clerks have to remain at their offices until eight or nine; in not a few offices until ten or eleven, while in some it has been midnight or later before the staff has been able to start for home, and there are even some firms which, during the exceptionally busy time in October, actually had cots installed so that the men could sleep in the office without going home. Considerate as this action must have seemed at first sight, it had the grave drawback of keeping the employees in the vitiated atmosphere in which they had been working all day. It is no wonder, therefore, that living under such abnormal hygienic conditions, men have become so nervously bankrupt, they have been forced to go to their physicians for treatment. A large number who have not wanted to incur the expense of medical advice are so "nervous" to use their own word, they have been heard to declare that if the subway or elevated train on which they are going to work happens to stop for a minute between stations, they fidget in their seats, wondering whether they are going to be held up, or if the suburban train is late they become terrified lest they cannot get to the office on time.

It is an unfortunate fact in connection with our nervous organization that it is easier to break down its resistance than to build it up. Even when the pressure is removed, therefore, and the work of Wall Street is done under less abnormal conditions than it has been during the last three or four months, the men are likely to continue to feel for a long time the effects of the strain through which they have passed. Many of them will, unfortunately, attempt to counteract this strain either by alcohol or by eating more than they have been in the habit of doing, in order to "build up their

strength," to use their ordinary phrase. Unhappily, it takes something more than the ordinary mentality to realize even today, after much preachment on the subject, that alcohol in any form is the worst possible thing for jaded nerves and that the digestive system which lacks its full innervating power is not equipped for dealing with increased quantities of food. Men suffering in this way would be immeasurably better off if they would eat the least they can do with, rather than the most they can get, as by this means they impose the minimum work on weakened organs. It would be, indeed, as stupid to send a man with a sprained ankle for a big walk and expect him not to suffer, as it is to put a big meal into a sprained stomach and expect it not to suffer. The lay mind is, however, beset with the idea that if less food than usual is eaten, the individual will get weaker, no matter what causes the need for diminishing the food. It is one of the fallacies which the profession has to correct before any real headway is made in teaching men how to live rightly. If only Wall Street could be taught this lesson, much of the neurasthenia which exists at present and the nervous strain which is always predisposing its victims towards neurasthenia would be able to be avoided.

The Ensalivated Thumb.—To the great causes of disease, the attention of the profession has long been directed. There are, however, many apparently insignificant factors which, acting together over a wide area and through an enormous number of people, produce an effect which, in the aggregate, may be more potent for harm than is realized.



To this class unquestionably belongs that common but exceedingly reprehensible custom, to be observed in practically every establishment in which foodstuffs are sold, of carrying the thumb to the lips and moistening it with saliva in order to facilitate the opening of the bag or the handling of the sheet of paper in which the purchases are placed or wrapped. As the food itself is almost invariably touched with the same

thumb, it is obvious that it must be defiled by the salesman's saliva.

It is an unsavory thought.

It is a still more unsavory fact.

Were anyone to smear deliberately any article of food with saliva, the person to whom that food was given would instantly reject it as being unfit for consumption. Yet, because that saliva is ostensibly used merely to open the bag, the proceeding is overlooked or ignored.

When we reflect that the mouth is one of the finest germ incubators we can find, that it constantly contains pathogenic bacteria, that men and women alike are often unconscious carriers of the microbes of diphtheria and typhoid, to say nothing of the fact that innumerable clerks and shop assistants must be victims of pyorrhea alveolaris, the danger the public runs of germ infection from this cause is by no means either slight or far fetched.

Whenever there is an outbreak of certain germ diseases, the physician's first thought is naturally to trace the source through the water or milk supply. By what has now become to be an exceedingly simple means of investigation, many an epidemic which might have assumed grave proportions is nipped in the bud. Yet here we allow to go on unchecked a habit, which through infecting our food may be the cause of more sporadic disease than many other more frequently suspected sources of infection.

It is, therefore, a matter which comes well within the cognizance of the physician and it might be made the subject of a crusade which should be not merely national, but world-wide in its application, for the delinquency of the New York shop assistants is equally true of their confreres throughout the United States, as well as Europe. Uneducated human nature always follows the line of least resistance, and unless checked by a campaign of education the "ensalivated thumb" will continue a constant source of food contamination.

Orchitis.—If you have a case of orchitis, *Med. Summary* suggests, suspend carefully, apply guaiacol in camphorated oil, in the proportion of a dram to the pint, bandage snugly, and give anemonin in granule form internally.



THE QUESTION OF COMPULSORY MILITARY SERVICE.

To the Editor

AMERICAN MEDICINE:

I have read with great interest the excellent article by Dr. Harlow Brooks in the September number of *AMERICAN MEDICINE* (which has just now reached me) about certain supposed advantages to be derived from the introduction into the United States of a compulsory military service.

The great mental and bodily benefit accruing from physical training of all kinds, and from a healthy outdoor life, is very generally understood and cannot well be gainsaid. But to make this physical and mental development dependent upon a compulsory military service is quite another matter which might rightly call forth severe and valid criticism. Some of the objections to this compulsory military service scheme which enter my mind upon reading Dr. Brooks' or any other article advocating the adoption by the United States of any such measure I beg leave to register with your highly valued and much esteemed medical publication.

Let me point out at the very outset, that the proposed measure is of such vast political importance, involving such vital and far-reaching political consequences, that its value from a purely medical or hygienic view-point is altogether inessential and immaterial. That any physical training—military or other—is conducive to a healthful bodily and mental development need not be asserted. But that is by far not the whole question. If the gaining of bodily and mental strength and discipline is to be obtained by a method which in itself is likely or certain to involve the nation in grave peril by its consequences in other directions, that method should be condemned, however salutary it may appear on the surface. Compulsory military service is a method of just this very dangerous

kind. During my three years' sojourn on this side I have been more than ever impressed with the marvellous greatness, progress and advancement of the United States in comparison with the countries in Europe. There is one little word which has been the igniting spark to this unparalleled intellectual and industrial evolution of our glorious United States—the little word *freedom*. Freedom of thought, freedom of speech, and an unhampered pursuit of happiness without restraint of caste or class. In marked contrast to this American spirit of freedom, pervading and diffusing everything everywhere with its holy glow, I find the atmosphere, the very minds of the people over here to be befogged, beclouded and thickened by *Imperialism*, *Clericalism*, and *Militarism*—a most detestable trio which puts its stamp on everybody and everything European. That to a certain element among the population in some of our large American cities *freedom* is occasionally equivalent to *rowdyism* is deplorably true, but the American people as a whole, and as I know them, are as disciplined and courteous in their general behaviour as any other people, though—and I am glad to say it—entirely lacking that servile courtesy which is such a distinctive mark of the European. How many times have I not admired the very good-natured and truly disciplined behaviour exhibited by those immense New York crowds upon many and various occasions of celebration and other gatherings of vast multitudes. An American crowd is easily handled by a handful of policemen, while a similar multitude in Europe would, as I saw once from a Parisian press report about a horse race, require thousands of mounted police to maintain order.

In *The New York Times Magazine* Section for Sept. 26, Sept. 29 and Oct. 3, are to be found the following articles, the perusal of which I would like to recommend as interesting and elucidating on the question of compulsory army service: "The Impachment of German-Americans," by Prof. Muensterberg; "The German-Americans and the United States," by Prof. Hart; "Germanic have supplanted American Ideals," by Mr. Wm. Barnes. It is impossible to read these articles without having the impression thrust upon one that our republican traditions and our American ideals

are really and gravely endangered through European contamination. I have always and most firmly believed in an "Americanization" of the world, but Mr. Barnes' article puts me in the fear of a "Germanization" of our free and beloved country. I do hope and pray that the reaction against Germanic influences so well started may not die out but continue and steadily increase, thus assuring the ultimate victory of the American ideal, which, as Mr. Barnes points out, as yet is far from an established fact.

"The Germanic ideal leads inevitably to the autocratic state, no matter how democratic may be its outward form" says Barnes.—And the gravest peril for the American ideal lies in *Militarism*. In his very able article Dr. Brooks does not entirely lose sight of that danger, and if the plan of military training could be carried out in the restricted form he suggests, all might be well, but the danger is, that the military machine once started on a nationwide scale, might easily get beyond control. This danger from Militarism is very ably and thoughtfully discussed by L. P. Jacks, editor of *The Hibbert Journal*, in an article entitled "Tyranny of Mere Things," and reviewed in *Current Opinion* for August, p. 113. Speaking of the tyranny of the military machine in Europe, says he in substance (quoting from *Current Opinion*): These vast machines, whether armies or engines of war are *made to be used*. Armaments possess a will of their own—a will to be used as armaments. "Make them big enough and costly enough, and they will assuredly get out of hand and control the governments by which they are nominally controlled." The impulse to use them for their intended purpose will ultimately prevail against every consideration of reason, humanity and common sense. So for Mr. Jacks—and I believe his theory is correct. Here is our country today investing enormous capital in the building and equipping of munition plants, and hand in hand with this there is to be a compulsory, nation-wide military training of our citizens. Will the "*raison d'être*" of those munition plants cease with the cessation of the present European war? Not very likely. We are rather more apt within a reasonably short time to be in the possession of armaments both big enough and costly enough to get out of hand and control the government by

which they are nominally controlled—in other words precisely in a position like that of Germany today and which started her on her present warpath. In less than forty years the United States would be transformed from a peaceful and industrious nation, working for the realization of the highest ideals of mankind into a bellicose people, imbued with German warlust and, governed by Germanic ideals, carrying on wars of annexation to the north and to the south. If this miserable and horrible war in Europe has taught the world a lesson at all, it is that of the danger which lurks in a compulsory nation-wide military service. If discipline cannot be injected into peaceful pursuits, into our schools and into our homes—which, however, both could and should be done—let us rather be without discipline. Let us train men to work and not to fight. Let us beware of compulsory military service in any shape or form, let us beware of *Militarism* on the Germanic plan, which is nothing but the highroad to imperialism and which logically leads to the extinction of the torch of liberty.

A. E. ENGZELIUS, M. D.

Roros, Norway, Nov. 1st, 1915.



Treatment of Rheumatic Fever.—Dr. Butler (*Am. Jour. of Clinical Medicine*, Oct., 1915), gives the following as the principal indications in the treatment of rheumatic fever:

1. To place the body at rest, so that the minimum amount of strain is likely to be thrown upon the tissues most likely to be affected: viz., the heart, joints, and muscles.
2. To neutralize the rheumatic toxin or to kill the specific cocci circulating in the body.
3. To reduce pyrexia and relieve the painful arthritis by means of general and local remedies.
4. To guard against cardiac inflammation.
5. To sustain the strength of the patient by means of suitable food.
6. To control hyperpyrexia.
7. To guard against relapses.
8. To restore the general bodily vigor and prevent further attacks.

In my opinion the vaccine-treatment of rheumatic fever still is in the experimental stage.

If a remedy of this character is to be used at all, I believe it should be an autogenous vaccine or the bacteriolytic serum obtained from cultures made from the throats of persons suffering from rheumatic angina. The administration of this serum seems not to be contraindicated by the existence of endocarditis, although it is advisable to exercise caution in using it in cases of high fever, pericarditis, and pleurisy. While I am not ready to recommend the use of this serum, to the exclusion of the salicylate and alkaline treatment, I would advise its trial in obstinate cases and in cases of malignant endocarditis of rheumatic origin.

Treatment of Copremic Acidemia.—As a whole, the treatment of copremic acidemia, says Dr. B. G. R. Williams (*Amer. Jour. Clin. Med.*, Oct., 1915) may be expressed categorically as follows:

1. Reduction of the proteid diet.
2. Elimination of the focus of the intoxication.
3. Administration of antacids.

Obviously the main problem will lie in eliminating the focus of intoxication. But how?

A preliminary cathartic is necessary, and since we are dealing with the colon, this obviously must be a saline. Then should follow a course of laxative alkaline salines, to insure a strict housecleaning in this natural incubator. This may be coupled with the intelligent use of efficient intestinal antiseptics. We know that these will not murder every erring germ; nevertheless, much may be accomplished in this direction.

Then, after a week or so, we cease giving the antiseptics, but continue the laxatives—we are ready to substitute a well-behaved germ. Yeasts appear to be of some value, but the most efficient policeman of the colon appears to be Metchnikoff's bacillus bulgaricus; and this I do not hesitate to say, judging from my observations in hundreds of cases, will act almost as a specific when backed by proper attention to the other principles of treatment. The urinary reaction will become normal, ammonia will sink and urea rise, indicans will disappear. Albumin will disappear from the urine unless the case has gone too far, casts cannot be found, vertigo, nausea, mental torpor and headache will clear up, the complexion will become better and appetite will be regained. In other words, we have cured a case of nephritis. We have held and used the master key to the door of Hope.

Of antacids there is no lack and they may be carefully used along with the treatment devised to eliminate the focus of intoxication.

Treatment of Biliousness.—Dr. Combs (*Med. Council*, Oct., 1915) states that eating between meals often is the cause of biliousness. He says it takes a definite time for food to be converted into a proper fluid or chyle for the intestinal papillae to take up and pour into the lymph channels which discharge it directly into

the vena-cava. The digestive process is both chemical and physiological, and no mixed diet could possibly be so processed in less time than three hours, and more time than this is always safer and often imperative; yet many a man will take breakfast at the regular time and in an hour or so take on a "few peaches," and still later, but before noon, he will enjoy a nice cantaloupe or two. eat his regular square meal at dinner, watermelon at least twice in the afternoon and then supper as usual. He may stand this one day and not suffer any inconvenience from it, and, of course, he does not have the opportunity of such feasts every day, but he figures that as it did not hurt him that one day it would not hurt if he does the same thing every day the opportunity comes. With all this rapid mixing of diet some of it goes into the intestines unfit for absorption, but the lacteals take it up, some of it, in the crude state (or more properly speaking, a spoiled state), and so the blood is literally poisoned. Sometimes we say the patient suffers from toxemia, which is right; but I think he is also bilious, that is, biliousness is only another name for it, and is really the better term for these acute cases.

The treatment is simple enough and easy; if not always entirely satisfactory, and would generally be satisfactory if the patient would take advice as with the same conscience that he takes his medicine; but he won't do that; he tells you that he wants you to get him well; that he can take care of himself as a "general thing," and that he will send for you when he needs you.

There is no line of treatment that is so good but that something else might do very well, or at least not be fatal; but a very favorite treatment is to give calomel to begin with for both its antiseptic cathartic and lymphagogue effect, and if the stomach and intestines are very much irritated it is a good plan to give 15 to 30 grs. of bismuth sub. nit. with the calomel. It prevents nausea and griping and is a sedative to the mucous membranes, and for this reason a patient will think more of the doctor, and by winning his gratitude you naturally get better co-operation from him. This, then, with a subsequent thorough flushing out of the alimentary canal with some saline, preferably magnesium sulphate, four to six hours after the last portion of the calomel and bismuth, gives us our principal treatment, aside from some stimulants or opiates where indicated, for the first twelve to twenty hours.

Obstruction at Neck of Bladder.—B. Tenney of Boston (*Surg. Syn. & Obst.*, Aug., 1915), says: Prostatic obstruction without enlargement may be due to—

1. Dense layer of new-formed connective tissue below the mucous membrane and infiltrating the internal sphincter—the fibrous ring.

2. The same process with chronic inflammation of the submucous gland tissue—the bar.

3. Hypertrophy of submucous gland tissue involving the suburethral or subtrigonal group or both—the hypertrophy in miniature.

4. Connective tissue replacing the glandular

below the internal sphincter muscle—the fibrous prostate.

5. Congenital malformation.

Clearly, the conditions here suggested do not call for the same treatment. When the obstruction is small and strictly confined to the region of the internal sphincter, it is possible to get good results by methods that do not apply to the general condition which we know as the small fibrous prostate. In this condition we are practically dealing with scar tissue which must be stretched or cut through or removed as completely as possible. Connective tissue with its tendencies to contraction, reproduction, and occasional hypertrophy is poor material for surgical work. A result which is satisfactory at first may be quite the reverse after a few months of neglect; and permanently good functional result, whatever the operation, depends on the patient's faithful attention to his sounds.

Cancer of Breast.—G. E. Pfahler (*Inter. Med. Jour.*) writes of Roentgen therapy in post-operative cancer of breast and thus concludes:

1. There is a tendency to recurrence and metastases of carcinoma of the breast in at least 20 to 25 per cent. of the cases, even with the earliest operations, and in those in which there has been glandular involvement there is a recurrence in at least 75 per cent. of the cases. Therefore, it is our duty to use every means at our command that gives promise of an increase in the number of cures.

2. Since definite recurrences and metastases, following carcinoma of the breast, can be made to disappear by means of roentgenotherapy, it is reasonable to expect the disease to disappear at an earlier stage immediately after operation, when only a few isolated cells or a beginning infected gland remain.

3. Efficient and thorough treatment in the early cases will probably increase the percentage of ultimate recovery from 75 to nearly 100 per cent.

4. Thorough massive dose treatment by cross-firing methods may be expected to accomplish more than has been previously accomplished by the older methods.

5. Patients should be kept under observation for several years, and at the earliest sign of recurrence they should be subjected to a thorough course of deep roentgenotherapy.

Vaccines in Sciatica.—F. C. Zapffe (*Journal A. M. A.*, January 16, 1915) reports a case of sciatica in a patient, occurring some weeks after an attack of gonorrhea. The examination of the urine showed staphylococci and a diphtheroid bacillus. A mixed autogenous vaccine was made from a culture of these organisms, and was injected in effective doses of 50,000 to 5,000,000 bacteria. Seven injections were given in all and the patient recovered. Zapffe says the vaccine treatment of sciatica has not received the attention it deserves. Little is said of it in text-books, and only gonococcic vaccine is mentioned. The subject is considerably misunderstood at the present time. The case, the

dose, the reaction, and time of administration and duration of treatment must receive careful and individual attention, and can not be given by rule as seen. The source of infection must be determined, and when found, the vaccine is easily obtained. Cases not amenable to vaccine therapy will yield negative results; therefore, every other possible source of the sciatica should be thoroughly investigated before vaccine therapy is tried. The case is reported to call attention to one source from which sciatica may originate.

Vaccines in Surgical Practice.—As a result of the European war, says the editor of the *International Journal of Surgery* (Nov., 1915), much knowledge has been gained regarding the application of vaccine therapy—that remarkable though inaptly named branch of therapeutics given to the profession just ten years ago by Sir Almroth E. Wright. The occurrence of infected wounds, as well as, in a lesser degree, infectious diseases, is naturally increased enormously during war; and the opportunity to study the subject and to look into the by-paths that so frequently lead off the now well-beaten track has resulted in many interesting and profitable experiences. Many millions of doses of various bacterial suspensions have been prepared and administered in both the medical and surgical divisions of army practice.

The profession is just beginning to get some of the practical benefit of a number of the deductions made by those who have found time from their arduous duties to report their observations. Quite a crop of articles is now appearing in the medical literature of different European countries, and it is obvious that much attention has been paid to the subject considered here.

From a careful perusal of a dozen or more communications published in the last three or four months in the medical journals of Great Britain, Germany, France, Russia and Austria, it appears that many of the statements regarding the probabilities of vaccine therapy which were made by some of the enthusiasts six or eight years ago (and were received with the skepticism which, rightly or wrongly, is the customary attitude of the medical profession toward things new or novel), are well founded.

In surgical practice, especially, the use of bacterial therapy is advancing rapidly. In fact, the majority of the articles referred to above are concerned with various phases of vaccine therapy in war surgery. For instance, many hundreds of thousands of doses of a stock "mixed infection vaccine" made in various British laboratories, including that of Sir A. E. Wright at St. Mary's Hospital, London, have been used in the army hospitals in England and France as a means of preventing or reducing the dangers of the common pus infections in the innumerable wounds. The clinical results will be much more exactly tabulated later, but generally speaking, they have been very good.

One of the recent reports comes from Russia and forms part of a comprehensive consideration of the whole subject of vaccine therapy by Antonovsky (*Russky Vrach*, 1915, Nos. 14 and

15). In the latter part of his paper Antonovsky makes a pregnant remark anent the use of vaccines as prophylactors. He finds that small doses of mixed stock vaccines containing the usual pyogenic organisms may be given during the transportation of wounded soldiers with excellent results. He also emphasizes the value of similar inoculations prior to surgical operations both in civil and military practice.

In a recent general consideration of vaccine treatment Madden, of Cairo (*Lancet*, August 7, 1915, p. 271), recommends several forms of prophylactic bacterial inoculations. He advises the injection of pneumococcus vaccine before operations on the tongue, mouth and throat, and lays special stress upon the value of this measure prior to splenectomy. He likewise recommends the use of a stock colon vaccine "before severe appendicitis operations and also before prostatectomy"; and we presume that equal or even greater benefit is likely to accrue if this procedure is employed prior to appendicectomies that are not so "severe."

In fact, prophylactic bacterial inoculation is a rational and scientific pre-operative measure, as recourse to the Van Cott combination vaccine before abdominal and pelvic surgery will show. It may be well to add that injections of this character should preferably not be given within thirty-six hours previous to an operation.

Still another advance in vaccine therapy has developed in the war hospitals in northern France; and while it may have but little practical value to us in everyday practice, at least it shows the extending scope of this branch of therapeutics. The dreaded "gas gangrene" is now being treated with a polyvalent stock vaccine of the *B. perfringens*, and this method "offers a very promising outlook for the control of a disease which is extremely difficult to treat, and, incidentally, is another proof of the value of polyvalent stock vaccines over the much more difficult to obtain autogenous preparations."

The dosage of vaccines in surgical practice seems to be undergoing revision—downward. As prophylactors, generally speaking, the dose is large—the average doses recommended by clinicians and manufacturers remain the same; but in the treatment of infected wounds it seems best to give bacterial inoculations with caution, using the temperature curve to control the size and frequency of the injections. Captain Tidy of the British Red Cross Hospital at Netley makes the following remarks in this connection (*Lancet*, August 14, 1915, p. 327): "The endeavor is to give as large a dose as possible without producing a rise in temperature. The method of dosage described is based entirely on the treatment of wounds at Netley. Probably much larger initial doses and more rapid increases can be given without bad results in numerous cases, but if this is done there will be occasionally an unfortunate result with marked rise of temperature and severe symptoms, and when this happens the results are usually prolonged. The best improvement which can be expected from vaccines in the wounded cannot be held to counterbalance a few such instances. When this hospital was first opened, larger doses were given and the results were

unsatisfactory. Therefore it is only justifiable to commence with very small doses."

The initial dosage recommended by Tidy is as follows: *Streptococcus*, not exceeding 2 millions; *B. coli*, 30 millions; *Staphylococcus aureus*, 30 millions. Subsequent injections are given at intervals of five days and when progress is satisfactory the successive doses are 50 per cent. larger. If there is a decided rise of temperature following an injection, the next dose should be half the previous amount. In acute septicemic conditions a stock *streptococcus* vaccine is given, the initial dose being 2 millions, and it may be repeated every two or three days.

With mixed vaccines Tidy does not advise reducing the amounts of the individual organisms, but combines them in the initial doses mentioned above, repeats injection in five days, and increases the dose of the bacterium considered to play the most important part in the infective process 50 per cent. at each administration, while the other organisms are increased by only 33 per cent. In cases receiving this treatment, an operation, however slight, is considered as taking the place of an injection, the next dose being given five days later. This does not apply to acute septicemic cases.

Surgeons have good reason to be grateful for the benefits conferred upon them by vaccine therapy, and the prophylactic use of bacterial vaccines in surgical practice demands still greater attention and wider application; it will shorten the post-operative confinement, reduce to a minimum the incidence and ill effects of infection, and its routine application will do much to enhance confidence in a procedure which is destined to come into still greater prominence not only in surgery, but in medicine as well.

GENERAL TOPICS

The Spread of Typhus Fever by Lice.—Readers of that extraordinarily vivid book the "Mémoires du Sergent Bourgogne," giving the report of an eye-witness and victim of the disasters of Napoleon's Russian campaign in the year 1812, will remember, says a writer in the *Lancet* (June 12, 1915), the horror with which the author found himself suddenly infected with vermin a few days after the French retreat from Moscow had begun. The infection was picked up, he says, from some reed mats on which he went to sleep in the village of Dorogoboui; as soon as he felt the itching he got up, stripped, and threw his shirt and trousers on the fire. The vermin exploded in the flames like the fire of two ranks of infantry; but for the next two months the gallant sergeant was never free from vermin, and in consequence his Mémoires contain repeated longings for clean linen. General de Ségur, who wrote a well-known account of

Napoleon's Russian campaign from the point of view of a staff officer, concerned himself with such things as the European political situation, Napoleon's plans and conversation, or the disagreements between the various members of his staff, but hardly touched upon such lowly matters as pediculosis among the French troops. Yet the subject was one of the utmost importance, had he known it; in its retreat from Moscow, Napoleon's Grand Army was harassed by a severe epidemic of typhus fever carried by vermin, and the soldiers forming the wreck of the Grand Army spread death and destruction by typhus fever right and left wherever they passed through Germany on their way from Russia. As Dr. A. Rose points out in "Napoleon's Campaign in Russia" the position of affairs is clearly shown in the report of Dr. Krantz, a Prussian army physician attached to the Grand Army, published in 1817. The lice carried typhus fever with them, and soldiers showing no sign of the disease were capable of infecting the families of civilians in whose houses they were quartered. The rapidity with which the infection spread is indicated by facts such as the following. In the 1st East Prussian Regiment of Infantry there was not a single case of typhus fever until it had marched for 14 miles on a highway along which the French had passed, while after this there were 15 or 20 cases in every company of 150 men. Dr. Krantz had most interesting observations to record on the treatment of typhus fever. The open-air treatment, inevitable in the case of soldiers on the march, had a mortality of only 2 or 3 per cent., while the patients treated in hospitals died in large numbers, also infecting and killing the physicians and nurses who attended them. Soldiers presenting the headache, nausea, and vertigo that are the first symptoms of typhus fever, were dressed warmly and put into wagons and covered with straw, with other precautions to avoid frostbite. At night they were quartered in isolated houses to avoid the spread of infection. It was remarked that the open-air method of treatment abolished the stage of convalescence after the attack was over. Three days after the patients had been free from fever for 24 hours they were fit for half a day's march or more. Dr. Rose, in a recent issue of the *Medical Fortnightly*, St. Louis, lays great stress on the importance of killing the lice that seem even nowadays, to judge by what one hears from the front, to be inseparable from fields of battle, and he quotes on this point from a circular recently issued by the German Imperial Board of Health. It is obvious that powerful parasiticide drugs must be used to kill the lice, in cases where baking or boiling the infected clothes, or, as Virgil puts it, *Infectum eluitur scelus, aut exuritur igni* is a counsel of perfection and impracticable. The Board recommends for this purpose sabadilla vinegar (containing veratrine), kerosene, eucalyptus oil, and balsam of Peru. Weyland in the Franco-Prussian war of 1870 found benzine excellent for this object. The clothes were exposed to benzine vapour in a tightly closed box for two or three hours. A recent number of the *Deutsche Medizinische Presse* speaks of asafetida and naphthaline, regretting that no

satisfactory prophylactic and no curative remedies have yet been found. Dr. Rose thinks that benzine or gasoline will probably prove the most serviceable. The German State railways have an excellent plan for cleansing their railway carriages. The whole carriage is run into a large iron cylinder, which is hermetically sealed; then the air is exhausted from the cylinder and its contents are warmed up (far short of the boiling point of water) by steam pipes. The lice infecting the upholstery of the carriage can survive the exposure to a partial vacuum, but when the heat is turned on their body fluids are evaporated at the low pressure, and so they die the death of desiccation.

American Medical Editors' Association.—The 46th annual meeting of the American Medical Editors' Association was held October 18th and 19th at the McAlpin Hotel, New York City, under the presidency of Dr. H. Edwin Lewis, Editor of *AMERICAN MEDICINE*. The following papers on timely and instructive subjects were read and evoked very interesting discussions.

"Twenty-five Years in Medical Journalism." By Dr. Edward C. Register, Charlotte, N. C., editor of *Charlotte Medical Journal*.

"The Influence of the Physician in Public Affairs." By Dr. Ira S. Wile, New York City, editor *Medical Review of Reviews*.

"Some Aspects of Medical Sociology." By Dr. James P. Warbasse, Brooklyn, N. Y., special editor *American Journal of Surgery*.

"Some Fundamental Considerations of the Problem of Narcotic Drug Addiction; the Medical Editor's Responsibility." By Dr. Ernest S. Bishop, New York City, Professor Clinical Medicine, N. Y. Polyclinic.

"The Relation of the Specialist to the General Practitioner." By Dr. Anthony Bassler, New York City, editor *American Journal of Gastro-Enterology*.

"The Medical Reserve Corps of the United States Army." By Dr. Harold Hays, New York City.

"The Doctor and Medical Legislation. The Medical Editor's Obligation." By Dr. C. F. Taylor, Philadelphia, Pa., editor *Medical World*.

"Medical Compensation Law." By Dr. Thomas Darlington, New York City, ex-Commissioner of Health, Member New York State Workingmen's Commission.

"The Problem of the Medical Expert." By Dr. J. J. A. O'Reilly, Brooklyn, N. Y., member New York Bar.

"The Possibility of a New Specialty." By Dr. B. F. Roller, B. S., New York.

"Our Trade Mark Laws in Relation to Foreign Made Drugs. A Problem of the Hour." By Dr. F. E. Stewart, Philadelphia, Pa., Chairman of Committee on Patents and Trade Marks, American Pharmaceutical Association.

Many of the members were accompanied by their ladies, for whom very enjoyable entertainments were provided in the form of a theatre party to the Hippodrome, Monday afternoon, October 18th, and an automobile ride through the upper section of New York the following afternoon. The annual banquet took place in

the Green Room of the McAlpin Hotel, Tuesday evening, October 19th, and was a delightful affair. After an excellent dinner, the Toastmaster, Dr. H. Edwin Lewis, delivered his presidential address on "The Opportunities of the Hour for American Medical Journalism," and then introduced various speakers who responded in a happy vein to the toasts assigned to them. Among these were Dr. Henry O. Marcy, of Boston; Dr. W. C. Abbott, of Chicago, Ill.; Dr. Walter M. Brickner, of New York; Dr. J. J. O'Reilly, of Brooklyn, N. Y.; Dr. Charles F. Taylor, of Philadelphia, and Dr. Joseph MacDonald, Jr., of New York. Dr. E. C. Register, of the *Charlotte Medical Journal* was elected president of the Association for the year 1915-1916.

The Role of Sex.—The object of sex, says Havelock Ellis in *Physical Culture* (Sept., 1915), is by no means to aid reproduction, but, rather, to subordinate and check reproduction in order to evolve higher and more complex beings. Here we come to the great principle, which Herbert Spencer developed at length in his "Principles of Biology," that, as he put it Individuation and Genesis vary inversely, whence it follows that advancing evolution must be accompanied by declining fertility. Individuation, which means complexity of structure, has advanced as Genesis, the unrestricted tendency to mere multiplication, has receded. This involves a vastly diminished number of offspring, but an immensely increased amount of time and care in the creation and breeding of each; it involves also that the reproductive life of the organism is shortened and more or less confined to special periods; it begins much later, it usually ends earlier, and even in its period of activity it tends to fall into cycles. Nature, we see, who at the outset had endowed her children so lavishly with the aptitude for multiplication, grown wiser now, expends her fertile imagination in devising preventive checks on reproduction for her children's use.

The result is that though reproduction is greatly slackened, evolution is greatly accelerated. The significance of sex, as Coulter puts it, "lies in the fact that it makes organic evolution more rapid and far more varied." It is scarcely necessary to emphasize that a highly important, and, indeed, essential aspect of this greater individuation is a higher survival value. The more complex and better equipped creature can meet and subdue difficulties and dangers to which the more lowly organized creature that came before—produced wholesale in a way which Nature seems now to look back on as cheap and nasty—succumbed helplessly without an effort. The idea of economy begins to assert itself in the world. It became clear in the course of evolution that it is better to produce really good and highly efficient organisms, at whatever cost, than to be content with cheap production on a wholesale scale. They allowed greater developmental progress to be made, and they lasted better. Even before man began, it was proved in the animal world that the death-rate falls as the birth-rate falls.

American Medicine

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Physicians in Politics.—The physician in politics is a very different thing from the physician as a politician. The medical man should concern himself with politics but he should not be a politician. For the public weal and in order to guard his own interests, it is only common sense that every medical practitioner should keep in close touch with public affairs. When it is considered how many bad laws are put forward or passed which militate against the welfare of the people, which tend to lower the dignity of the profession, impair the opportunities of its individual members for doing good, and diminish their chances of gaining an honorable and honest livelihood, it is a matter for wonder that they have not become alive to the needs of the situation before now. It is perfectly true that the physician is greatly handicapped in any efforts he may make to protect his rights and the rights of the public. He is in a position that does not admit of his serving two masters. If he is to succeed in his chosen vocation, he must enter into it heart and soul, and allow no outside distractions to inveigle him from the prosecution of his career. Therefore, his position differs greatly from that of those belonging to other professions or trades. A lawyer, for example, can usefully and successfully combine politics and the work of his profes-

sion; in many instances it is to his advantage that he should be a politician as well as a lawyer. Politics and law go together in a harmonious manner, although not infrequently the connection seems to be sinister and bode ill to the community at large. The fact was early brought home to the lawyer that if he was to have a hand in the making of laws he had to go into politics. He has thoroughly grasped this truth and consequently in every country of the world the number of lawyers in politics is far greater than that of any other calling. For this reason the influence of the lawyer in politics is always active and paramount. He will not make laws, or allow any to be passed if he can prevent their passage, that are likely to hurt his interests. He will, however, assist in framing and passing laws which can be broken—for if laws could not be evaded where would be the *raison d'être* of the lawyer? Corporation lawyers for example, exist and “flourish like the green bay tree” mainly because it is to the pecuniary advantage of powerful corporations that no law should be passed that will touch their pockets. If such laws be passed, it is the duty—often at great profit—of the corporation lawyer to find out the weak points and pick holes in legislative measures of this character. It must be confessed that he has become re-

markably skilful in this line of endeavor. A great English statesman, Lord Beaconsfield, a cynic who delighted in exposing the failings of mankind, once said that no law was ever passed through which an able lawyer could not drive a carriage and four. It is obvious then to every intelligent person that the interests of the legal profession are interwoven with those of politics, as it also is that many laws are placed on the statute books that are not as unselfish as their sponsors would like to have them believed to be. Members of many other vocations are often able to combine politics and business to a fairly satisfactory degree, with marked advantage and more or less profit to themselves. The doctor, however, is in a position that makes it necessary to consider every step with infinite care. If he goes into politics he must neglect his own work—or at least so it seems to the conscientious man—and therefore, as a rule, he often concludes that he had better keep out altogether. This is a foolish decision and entirely uncalled for. By doing this he simply plays into the hands of the politicians. Because a man cannot take an active part in politics, and at the same time carry on his practice with success, is no reason why he should not keep in touch with political affairs, especially everything associated with public health needs, or any attempt to pass laws inimical to his profession and to the people at large. As a matter of fact the influence of the doctor should be mainly an educative one. The family physician can do much in this direction, for if he fills the rôle as it should be filled, he will also be the family friend, with an influence as such that is unlimited. He may, in fact, become the guide, philosopher and friend in countless households and in this capacity exercise an influence that will have a most far

reaching effect on the health of the nation.

A healthy and inspiring sign of the times is that the man in the street is not only thoroughly alive to the fact that politics in this country are not all that they should be, but that reform is necessary. He has long realized that the politician is not imbued with the true altruistic spirit, that his motives are generally open to doubt, and that his efforts instead of being exerted for the good of all are really for the benefit of a comparatively small portion of the community with himself usually as the chief beneficiary. Appreciation of the sordid selfishness of modern politics has been slow in developing, but it is nevertheless making headway and the day is coming and coming fast when the professional politician, backed by the moneyed interests will no longer be able to fool the people. Lincoln's well known comment in this connection was prophetic. The physician can use his great influence as an educative force, to enlighten the people as to the needs of the situation. The time is ripe for great and fundamental reforms in the political system of our country; the duty of the physician as an earnest, loyal citizen is plain; with his matchless opportunities to spread the gospel of honor and honesty in politics and our civic life, can he ignore them and remain true to himself or his calling?

"Necessity is the Mother of Invention."

—This well-known proverb is being paraphrased and applied in the practice of medicine quite frequently these days. The scarcity of certain drugs in this and other countries is so marked that many physicians are looking for—and finding—other more easily obtained and less expensive remedies

to take the place of several of the foreign synthetics upon which the profession here, as elsewhere, had come to depend.

Since the exigencies of the European war have so depleted the supply of these and many other chemicals, and speculation has forced prices far beyond a reasonable limit, necessity has brought to light substitutes regarding which we find interesting references in current medical literature from time to time.

Murphy in his *Clinics* (August, 1915) is again using sodium cacodylate in syphilis. In his consideration of the treatment of a case of chancre of the tongue, Murphy remarks that he considers the best method of treating early syphilis is daily hypodermic injections of sodium cacodylate. He finds that chancres usually heal within six or seven days and much faster under the influence of this salt than with salvarsan. In fact Murphy says "I recently recommended salvarsan, but I have returned to my first love, which I originally suggested and used before we had Ehrlich's '606'. Owing to the great increase in the price of salvarsan to \$30 or \$35 an ounce, I think sodium cacodylate is the therapeutic agent of the future. Fifteen cents' worth is sufficient to cure a chancre."

The profession is also finding that preparations of the posterior lobe of the pituitary are most satisfactory substitutes for the various foreign digitalis products which had come into vogue here. The effect of pituitary liquid upon a waning heart is both dependable and excellent, and no physician who has noted its salutary influence would think of using the older preparations, and, fortunately, they do not have to depend on outside sources for a supply.

Reference was recently made in the editorial columns of this journal (AMERICAN

MEDICINE, October, 1915,) to the remarkable success that is being obtained from the use of sodium hyposulphite and hyposulphurous acid in the treatment of wounds in certain British hospitals in France and England. Carbolic acid and other crude coal-tar antiseptics have been quite superseded and it looks as though they would never regain their one time popularity as local antiseptics.

Another interesting coincidence of a similar character is found in a paper by Victor G. Heiser (*Jour. A. M. A.*, August 7, 1915) on his experiences in the far East in the treatment of hookworm disease with oil of chenopodium, in place of the presumably indispensable thymol. The war made thymol almost unobtainable and prohibitive in price, and many physicians in the Orient began to use the oil of chenopodium instead. In Heiser's report are collated the experiences of several men with a total of over 50,000 cases of hookworm disease in the Straits Settlements, Sumatra and the surrounding islands. The results were superior to those obtained from thymol and there were no after effects. The procedure recommended is as follows: A liquid diet is given for the evening meal, breakfast is omitted and 16 minims of the oil of chenopodium are placed on sugar, divided into three equal parts and given at intervals of one hour. Two hours after the third dose, 17 grams of castor oil and 3 grams of chloroform are administered; but even this may be omitted if thought advisable. In the study of this large series of cases it was remarked that this remedy is a most effective vermifuge for the oxyuris, roundworm and tapeworm.

There are numerous other enforced substitutions which bid fair to be permanent changes in our therapeutics even when

previous supplies and prices of various remedies are reestablished. In the meantime as the cost of quinine has increased six or seven hundred percent., who knows but that this great specific is destined to be supplanted also?

The Oral Administration of Bacterial Products.—In an address before the recent meeting of the Medical Society of the State of Pennsylvania, Solomon Solis-Cohen, of Philadelphia, reported his experiences during a period of five years with the administration of tuberculin and bacterial vaccines by the mouth. The procedure was simple enough, consisting of adding the desired dose to an ounce of saline solution or beef juice and giving it by mouth on an empty stomach at intervals of three to seven days. The dosage is regulated by the effects brought about and gradually increased just as we have learned to do in the hypodermic injection of similar products. Solis-Cohen does not find this method superior to the older procedure; but the results obtained showed that they were of equal efficacy and not productive of digestive disorders.

This appears to be an important advance in biologic therapeutics, and may eventually revolutionize the technique of tuberculin and vaccine therapy. There are always cases in whom the hypodermic injection of any remedy is an inordinate inconvenience, and not a few sufferers who might have been benefited by measures of this character have refused to allow hypodermic injections to be made.

Clinical experimental work in this direction has also been carried out at the Jefferson Hospital, Philadelphia, and Roddy, in

discussing Solis-Cohen's paper, stated that there was evidence that suspensions of the pneumococcus, staphylococcus, streptococcus and Bacillus of Friedlander, as well as tuberculin, were not inert when given by mouth. Following such treatment there was usually a decided clinical improvement and complete recovery followed in about one half of the cases thus treated. A pronounced and typical reaction followed excessive doses; and it was evident that this method of giving tuberculin and vaccines is of distinct clinical efficacy and hence worthy of a more extended and comprehensive trial.

The anti-narcotic laws continue to cause confusion and annoyance to many who are sincerely trying to obey them. The situation is particularly bad in New York state, since there are two laws operative—the State or Boylan law and the Federal or Harrison law. While not in conflict with each other the differences that exist between the two laws certainly give rise to much misunderstanding and confusion. That the Boylan or local state law is no longer necessary now that there is a national law, is evident, and it is hoped that it will be repealed at the next session of the New York State Legislature. The defects in the Boylan law have been apparent, and this is not surprising, for it was very loosely drawn without the thorough study and consultation with those familiar with the subject of drug addiction, that should have been given to it before enactment. No one can deny the necessity that existed for attacking the drug evil. Effective laws have been needed for sometime to curb and regulate the sale of habit forming drugs. Restrictions pertain-

ing to the actual use of these drugs have also been necessary, as every one alive to the situation has realized. But to accomplish their full purpose without imposing needless inconvenience on the medical profession or unnecessary and uncalled for hardship on innocent people, it was no less necessary that these efforts be intelligently and skillfully directed, and the laws be drawn, not to interfere with or to prevent the rightful use of narcotic drugs by the medical profession, but solely to regulate their sale and use. Had greater care been given to the preparation of this so-called Boylan law and the medical men of the state been consulted as to the practical phases of the question, it would have been much more effective, had fewer defects and saved the inconvenience that has been caused to honest practitioners of medicine.

A case in point will show one ridiculous defect of the law. A young practitioner whom circumstances had forced to undertake the treatment of several drug addicts had one patient, a young man, who for some cause fell into the hands of the police. This patient had been making daily visits to the doctor's office to get his supply of drug and such other treatment as was deemed necessary. He had been under treatment for some time, had shown an honest desire to get free of his habit, and on several visits to the doctor had been accompanied by his wife who knew of his condition and was co-operating in every way to help his recovery. On the day of his arrest, it was impossible for him to go to the doctor and so he sent his wife to get his allotted amount of drug. The wife explained the situation and asked the doctor to give her the day's portion of her husband's drug, stating that she would take it to him. The doctor did this and straight-

way found himself in the toils of the law. He was placed under arrest and, although a reputable physician in good standing, was marched away to the police station, like the veriest criminal, where he was locked up until bail was furnished. He was charged with violating that section of the Boylan law which declares it to be unlawful for any duly licensed physician to dispense, give or deliver any of the said drugs (narcotic), their salts, etc., except after a physical examination of the person under treatment. It was held that the law prohibits delivery of any narcotic drug to any one other than the person for whom it is intended, inasmuch as delivery to a second person does not admit of the physical examination which the law says must be made before dispensing, giving or delivering any of the drug. The uncertain, indefinite character of this part of the law will be at once apparent, for it is not plain whether the physical examination shall precede each dose, or the treatment as a whole. What does the law mean by "dispense, give or deliver *any* of the said drugs?" The amount of a single dose or the amount in a given prescription? If the law is to be interpreted literally a physical examination must be made before the administration of each dose of narcotic drugs. This means that every dose will have to be given by the doctor himself. This would be ridiculous, and is probably far from the ideas or intention of those who drafted the law. What this section of the law doubtless aimed to prevent is traffic in narcotic drugs by physicians, and to limit the giving or dispensing of narcotic drugs as much as possible to the bona fide relations between doctor and patient, and the requirements of medical practice. Not the least of the elements of weakness, however, in this single section of the law is the dependence placed

on physical examination. To be sure, requiring a physical examination establishes personal relations between doctor and patient, and creates certain obligations on the part of the doctor—but physical examination may mean much or little. This particular section, with its opportunities for several interpretations, shows how loosely constructed the whole law is, and how far short it comes from meeting the problem of illicit traffic in drugs and the evils of drug addiction.

Did the doctor do wrong, however, in the case referred to? Was he disobeying the law in letting his patient's wife have the daily dose of narcotic drug that this patient would have been given personally had he been able to have come for it? To both questions we feel the answer should be unequivocally, no! In the first place, the doctor had thoroughly examined the patient not only once, but on several occasions. He was familiar with all phases of this man's case. The treatment was progressing well and an essential feature was the use of a certain amount of the narcotic at certain periods each day. If the patient failed to get this amount of drug and at the proper time, the treatment would be upset, the system or schedule disarranged and whatever gain had been made would be lost. In addition to this, if the patient failed to get his drug and was forced to go without it, his condition would be endangered, his very life jeopardized and he would be made to suffer the most awful agony and distress human beings are ever called upon to undergo. Any one who has ever seen a drug addict deprived of his drug will know how awful is the suffering thus produced. It has driven many a victim to suicide and it is not un-

usual for a person forced to go without his drug to suffer a fatal collapse or go insane. Knowing all this, and the personal equation of his patient, the doctor did absolutely right in sending him the amount of drug he knew he needed and wanted him to have. The fact that the messenger was the patient's wife and vitally interested in the treatment for obvious reasons, materially lightened the doctor's responsibility. Had he refused under the circumstances—and the practical certainty of delivery—to send the patient the drug needed, he would have been false to his duty as a physician, and morally if not legally responsible for any injury or ill effects resulting from that refusal. Certainly he would have felt the lash of his own conscience. In all earnestness we commend this physician for having done his duty as he saw it, even though the consequences were so annoying to him as a result. So far as we know the court has not passed on this case, but we feel sure that the doctor in question will be acquitted and the law interpreted according to reason and common sense. The doctor had made ample physical examinations of the patient; he was convinced of his patient's needs; the person who was to deliver the daily dose was, in a sense, an assistant to the doctor and vitally interested in seeing that the patient got the proper amount of his medicine and at the right time; and it was shown that full and complete records were made covering the whole transaction. Therefore, the absence of any wrong intent, likewise of any questionable features in the situation, such as doubt as to the doctor's relations with the patient, or any carelessness or neglect on his part; and finally, the evidence throughout that the doctor acted in good faith, with no other purpose than to serve

his patient's interests to the best of his knowledge and ability, would seem to admit of the case having but one outcome.

In the meantime the doctor has been forced to go to considerable expense, he has been caused great inconvenience and annoyance, and above all he has been made to suffer humiliation and mental distress that to a man jealous of his honor and reputation are beyond description. And all this the result of a law written vaguely and indefinitely without regard to the practical conditions of medical practice. Any day, any time, every practitioner of medicine is apt to find himself passing through a similar experience. Does it not teach us—the medical profession—to give more thought and time to the consideration of every law that concerns us in any way? There is no obligation we owe so definitely to ourselves—as well as to the people—as that of helping to make every law touching medicine or public health in any way, as explicit, just, and effective as it possibly can be made to be.

The great interest in drug addiction is well shown by the large number of letters we have received relative to Dr. Bishop's article last month and our editorial comments on the subject. To those who have written in, asking for further information concerning Dr. Bishop's work and methods, we are glad to say that we expect to have a series, or at least several papers from him during the next few months. Dr. Bishop is doing a fine, noble work with the same disregard for his personal interests that characterizes so much of the work of earnest medical men in general. We believe he has a real message for the medical profession and AMERICAN MEDICINE welcomes the opportunity of helping him deliver it. God

knows, if there is any question today that needs study and thought, it is that of the drug addict. Harassed from pillar to post by laws that are making him a criminal and malefactor, it is high time some one came out and had the courage and ability to show the world that the drug addict is sick, with a pathologic condition as real and definite as that of any other toxic disorder. We do not persecute malarial or rheumatic patients. No more should we persecute the sick and suffering drug addict.

The Care of the "Cured" Consumptive.

—The question of the care of the consumptive has long exercised the minds of physicians and philanthropists, although it is well within the memory of the present generation that intelligent and effective means of treating the tuberculous invalid were evolved and put into practice. In fact, it can almost be said that it is within recent times that it was first established beyond question that the person suffering from pulmonary tuberculosis, especially in the early stages, should, whenever possible, be placed in a sanitarium, or that those in advanced—and therefore more dangerous—stages of the malady should be isolated or at least partially so, in order that they may be better controlled and be less apt to spread infectious material. To a large extent, sanitarium treatment has fulfilled expectations, but not entirely so. Sanitarium treatment to be entirely successful, should control—or arrest—the disease to such a degree that patients discharged should be able to resume their vocations in civil life, or, at any rate, be able to earn their living. Of course, sanitarium treatment will never be able to do this in more than a certain percentage of cases, and it

is a regrettable fact that a very considerable number of patients discharged improved sooner or later relapse.

It is very apparent, therefore, that the treatment of tuberculosis is a very serious problem; its solution in some respects is as far from being realized as ever. As time goes on and statistics accumulate we are learning this vital fact, however, and that is that the aftercare of consumptives in whom the disease is arrested is as important as the care of those in whom it is active. Indeed, the one is the natural complement of the other. In the first place, the heads of sanitariums should never admit a patient in a condition so far advanced or so virulent that improvement is doubtful; and in the second place, they should shape their whole treatment of patients so that when their discharge is permissible, they are in a fit state and are properly trained to undertake a certain kind of work. Some sanitariums have effected this object with a very gratifying degree of success by what is known as the graduated exercise plan. When in the course of treatment it is thought that a patient can take up some work without injury to himself, he is given a small amount to do, which amount is slightly increased at proper intervals, always of course under medical supervision. The benefits that follow are often surprising, but especially commendable since sanitarium treatment as usually conducted is notably lacking in any provision for fitting patients to become useful as their health improves.

In no way could philanthropic enterprise do more helpful work than in establishing bureaus for the purpose of providing suitable employment for consumptive patients well enough to be discharged from sanitariums, and to see that such cases are properly followed up. The more the question is

studied the more evident it becomes that sanitariums should limit their patients as much as possible to individuals in the same stage; one of the main causes of the non-success of the sanitarium treatment of tuberculosis is the harmful custom of accepting patients in widely varying conditions, from the earliest to the far advanced and practically hopeless. The handicap placed on the incipient cases by having to associate with those in advanced stages has been shown repeatedly. The benefits, on the other hand, that follow careful limitation of cases taken by each institution to patients in the same stages, are no less conspicuous. This seems to be the keynote of the sanitarium treatment of the future, for in building up the tuberculous patient and fitting him for some line of work that will mean a useful, self supporting existence, we are doing the very thing—as we are just beginning to realize—that will help most to hold his disease in check and keep him from relapsing. So effective in the aftercare of the arrested tuberculous patient is a well adapted occupation, with its moderate degree of bodily exercise, mental stimulus and prevention of introspection, that soon we will come to look on the vocational treatment of tuberculosis as one of the most important details in the conflict with this dread disease.

"Tomorrow there may be no hopeless defectives."

This was the concluding sentence of one of our editorials last month. The happy outcome indicated, may be expected to result from two main causes—the living of the masses to conform more closely with higher ideals of purity than prevail today, and greater and broader scientific achievement by the medical profession. The first cause, there is reason to

believe, will call to birth, more children entitled to reasonably perfect physical forms. The second cause will make possible the correction of any structural defect which tends to handicap the new born child.

There is another and to our mind, a more important phase of the subject. In all the recent discussion about the disposal of the defective child too little emphasis seems to have been placed upon the moral aspect of the problem. While a physical disability is readily apparent, even to a novice, the psychical or mental state of a new born child is beyond the ken of the most discerning. Only in a presumptive way can its future be foretold; time alone can tell how its mind will grow. Still, it may be assumed that a physical lesion of the cranium will cause turpitude as well as mental deficiency, in accordance with the degree of the physical departure from the normal. The surgeon, however, has recorded more than one triumph in this direction. Operations whereby his skill has improved the moral status as well as the physical structure of his patient have been hailed with loud acclaim and justly so; but such results, we believe, are the exception rather than the rule.

Nature usually does her work well—although mistakes of natural origin do occur—and constantly we have evidence before us that human beings are furnished with such physical forms and with such seeds of mental and moral qualities as will enable each—if only he will utilize his endowments—best to perform the part allotted to him in life by the Architect of the Universe.

Seldom do the mental or moral seeds come to flower in early life; each quality must await its time of fruition in accordance

with its inherent character and with the environment furnished by the mode of life. Who can say, then—in a broad sense—when a child comes into the world, with a maimed physical body, that in later life it necessarily will be defective in any way? Many of us can point with pride to friends and acquaintances—if not to our own patients—who have accomplished feats of greatness in the face of physical handicaps, and also to many so-called physically perfect men who have failed ignominiously in the battle of life. History presents to us not a few mental giants who were physical weaklings or who at least, suffered from physical defects. Indeed, such defects often prove to be blessings. The overcoming of difficulties entailed by physical lesions develops moral fibre and will power just as surely as exercise increases the growth of muscular tissue.

Few physicians need to be reminded of these facts, yet it would not be surprising—because of the strenuousness of active practice—if at times there is an inclination to give undue consideration to the purely physical side of the human equation.

The ego that lives in the body of every human being daily performs wonders of an alchemical as well as of a chemical nature. We are but just beginning to appreciate this factor in the exciting cause that leads to the function of metabolism in the building and repair of the body, and with better understanding of life's processes the physician may be better able to assist Nature to work her miracles. May it not be that here we shall find the philosophers' allegorical stone?—the application of which is said to be the cure for all the ills to which flesh is heir? What may not this magical force do to assist an apparently defective child? At least, it would seem the duty of every

medical man to take counsel with the scientists of today who along various lines are working patiently, earnestly, thoughtfully and successfully in an endeavor further to push back the unknown upon the unknowable.

The special as well as the general knowledge acquired by the physician must ever be applied with reference to the necessities of the individual as distinct from every other individual; for as no two people can occupy the same space at the same time, so, no two people can be exactly alike and consequently each must be treated according to his own particular need and adaptability. This applies to the so-called defective as well as to the normal human being.

The inculcation among the laity of these and similar ideas herein expressed upon this subject will prevent many, many heartaches and hasten the "tomorrow when no defectives are born" among men.

"More Is In You."—In the little town of Bruges, Belgium, before the war, was an old-fashioned inn, which was frequented in the eighteenth century by the nobility of that day. In one of the little rooms was to be seen the motto "MORE IS IN YOU," prominently lettered on each of the four walls. It was the favorite motto of the reigning duke. It was the first thing the duke saw when he arose in the morning no matter in which direction he looked. It served as his daily inspiration to bigger and better accomplishments—a spur to ambition and a message of confidence. Could one have a better?



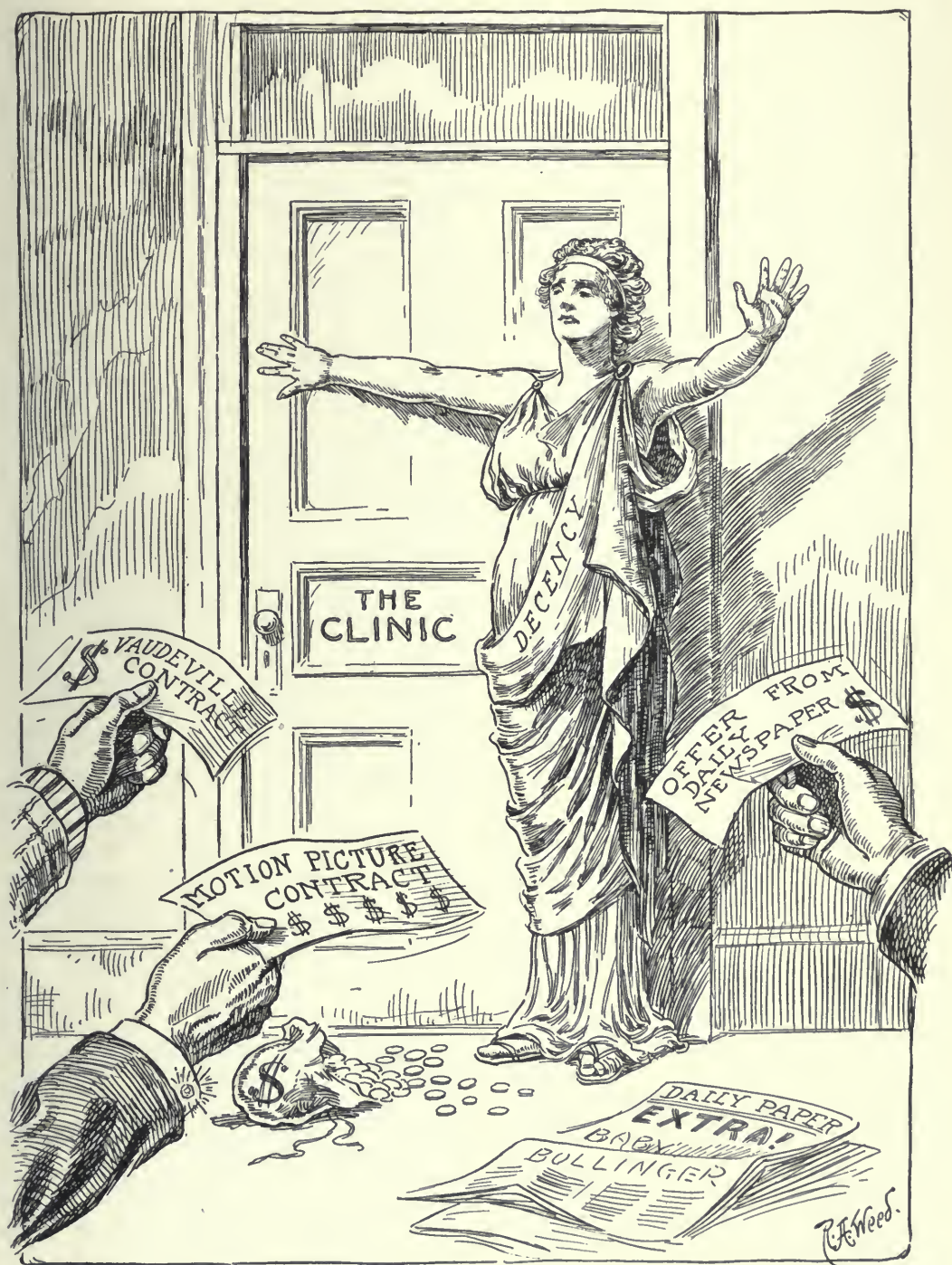
The Work of the United States Public Health Service.—The annual report of the Surgeon General of the United States Public Health Service just issued records the largest amount of work performed in the history of that organization. Since the passage of the law of 1912 the public health functions of the Service have materially broadened, thereby increasing greatly its usefulness to the American people. Throughout the report the economic importance of disease prevention is made apparent to the reader.

Perhaps the most important achievement of the year was the discovery that pellagra is a deprivation disease, resulting from a faulty diet containing an excess of carbohydrates. While the final experiments which led to this discovery have only recently been completed, the conclusion itself is the culmination of investigations extending over a period of seven years. The work has consisted of epidemiological field studies, actual feeding experiments conducted at numerous places in Georgia and Mississippi, and experimental research at Spartanburg, South Carolina, and other places.

A new national quarantine station was opened at Galveston, Texas, and the control of the Boston station was transferred to the Public Health Service.

On the occurrence of plague at New Orleans, the first outbreak upon the Gulf seaboard, the State and local health authorities requested the Public Health Service to take charge of the situation. Extensive rat-proofing and other anti-plague measures were undertaken, resulting in the eradication of the disease from among human beings, and the practical extermination of the rodent infection.

Great reduction in the incidence of malaria was obtained in localities where surveys were conducted. Drainage projects, rice culture studies and the conditions surrounding the impounding of water for



“Humanity’s Ills Are Not For Sale!”

power purposes were investigated in order to eradicate as far as possible the disease in these areas. Scientific investigations of malarial infection showed that in the latitude of this country the most important agent in carrying the infection through the winter season is man, and not the infected, hibernating, *Anopheles* mosquitoes as was previously supposed. From the standpoint of prevention this is a discovery of considerable value.

Studies of occupational diseases and industrial hygiene were instituted at several places during the year. A survey of the industries of Cincinnati was made to determine the cause of the prevalence of tuberculosis among industrial workers. The investigations relating to the migration of persons suffering from tuberculosis were completed.

Upon the request of the health authorities of five states, the organization and operations of the respective boards of health were studied and recommendations advanced for improvement in the powers and duties of these bodies. The health organizations of several cities were likewise investigated.

Investigations of the pollution of streams and the examination of shellfish were also conducted.

Trachoma was combated in the Appalachian Mountains, where it is most prevalent, over 12,000 cases being treated. Surveys in certain states during the year showed that the disease is not an uncommon infection.

Rural sanitation work was conducted in six different states and everywhere resulted in the reduction of typhoid and other communicable diseases.

Public health laboratories for the prevention of the interstate spread of disease were established at Chicago, Seattle, and numerous other railway centers.

Additional duties have been imposed upon the Service by extension of relief benefits to the newly organized Coast Guard and the physical examination of seamen applying for the rating of "able seaman." For this reason, and because of the greatly increased health function of the Service, an increase in the commissioned personnel is recommended. An additional building for the Hygienic Laboratory and the establishment of a National Leprosarium for the proper segregation and care of cases of leprosy are also recommended.

Neither the public nor the medical profession realize the splendid and far-reaching character of the work that is being done by the U. S. Public Health Service and Surgeon General Blue. So efficient has the Service become under the able direction of Dr. Blue that we no longer need a national department of health, for the U. S. Public Health Service is not only doing everything that such a department would do, but with its remarkable organization and personnel, it is accomplishing, quietly and effectively, what a new organization could not possibly hope to accomplish for several years.

We have earnestly advocated the establishment of a national department of health for several years, but we now feel that the formation of a new department would be a grave mistake, since it is entirely uncalled for. Any legislation in this line should be directed to amplifying the powers and increasing the resources of the Public Health Service, which to all intents and purposes is a national department of health. The Surgeon General and his associates know what is needed to bring the Service to a point where it could handle every national health problem with maximum efficiency. Accordingly, Congress should take counsel with these Public Health Service officials and give them the laws that they recognize as necessary to enable the Service to direct the health affairs of the country as they should be. As it is today, the Public Health Service already stands a staunch and trustworthy guardian of our national health, but with its powers and various activities enlarged and broadened as they should be by national legislation, and the Service will be one of the country's most potent forces for promoting the welfare of the people.

A New Name for Hunger.—The report of Dr. Joseph Goldberger of the United States Public Health and Marine Hospital Service, regarding his investigations into the incidence and etiology of pellagra have been made public recently, and indicate that the opinions of those who insisted upon a distinct bacterial origin of this disease must be modified, like those suggestions that pellagra was parasitic in origin. In the language of the public press pellagra is merely a new name for hunger; it is nothing but the result of prolonged semi-starvation.

It is undoubtedly true that the economic condition of a goodly number of the individuals who live in the "pellagra states" tends to confirm Dr. Goldberger's conclusions and his experiments were of a much more practical nature than those which have been so persistently carried out on animals.

Goldberger's tests with a number of criminals from Mississippi penitentiaries have proved in what appears to be a most conclusive manner that pellagra is essentially a form of starvation. Eleven men were fed on hot biscuits, fried mush, corn syrup, sweet potato, rice, cabbage and collards. They were also permitted to drink coffee. This diet was continued for 28 weeks with the result that six out of the eleven developed what was determined to be typical pellagra. Having thus found a cause, the cure seemed near at hand; and to make a long story short the regulation of the diet of these men by adding muscle building proteins secured excellent results.

Undoubtedly many of the favorable cases that have been reported in a very voluminous literature on pellagra have probably been benefited as much or more from the improved hygienic surroundings and diet that have accompanied the numerous forms of treatment. In future the control of this disease would seem to depend upon economics more than on medicine; and, like typhoid fever, another disease is likely to be taken out of the hands of the doctor and turned over to the sanitarian or prophylactor.

A Loss to Medical Journalism.—The sudden though not unexpected death of Kenneth W. Millican, on Nov. 26, is a real loss to medical journalism. It had been known in this country for some time that Dr. Millican was in a precarious state of health, for he had been in the Middlesex hospital, London, for some weeks when he died from acute dilatation of the heart. The editor of the *Lancet*, with which paper Dr. Millican had been connected in an editorial capacity for four years, in a recent letter to a member of the staff of AMERICAN MEDICINE wrote that his health became very bad in the early summer. He returned to his duties for a short time in August but was clearly unfit for the work. At first in the hospital he appeared to recuperate, but

during the last six weeks of his life it was obvious that his heart had entirely broken down. Dr. Millican was born in Leicester, England, in 1853. His father was a leading architect of that city. He was educated at Emmanuel College, Cambridge, took honors in the classical topics and entered St. Mary's hospital, London, with a natural science scholarship. In 1879 he took the diploma of M. R. C. S. and L. R. C. P.,



KENNETH W. MILLICAN, M. R. C. S.,
L. R. C. P., Edin.

Edin., in the following year. He was first a ship surgeon, then a country practitioner and after that moved to London and became surgeon and laryngologist to the Infirmary for Consumption in Margaret Street and also to the West London Hospital for Paralysis. Finally he came to this country and was in turn assistant editor of the *New York Medical Journal*, editor of the *St. Louis Medical Review* and an assistant editor of the *Journal of the American Medical Association*. He also did much useful work for AMERICAN MEDICINE and was its European correspondent at the time of his death. He left this country four years ago to join the staff of the London *Lancet* as assistant editor. Dr. Millican was a many sided man, a poet and a scientific writer of considerable knowledge and facility. As a man he was

deservedly popular and especially so in medical journalistic circles of New York. He leaves a wife and daughter and a grown up son and daughter by a former marriage.

Although it is several years since Dr. Millican left the United States many of his friends have kept in close touch with him. As a consequence his death will come as a personal loss to quite a few in St. Louis, Chicago and New York. Big, whole souled and lovable, Millican was a man who inspired genuine affection on the part of those who came to know him. He was kind and sympathetic and ready ever to serve his friends and those he loved. His personality while reserved and reticent was a charming one. To few men is it given to talk as interestingly as Dr. Millican could when one could get him to recount some of his early experiences as a ship surgeon. Ah no, no one who was fortunate enough to ever have known Dr. Millican as a friend will soon forget him.

The Index for 1915.—We want to call the attention of readers of AMERICAN MEDICINE to our annual index. Few other monthly medical journals in this country devote so much effort to making their index complete and useful. The large amount of material published during 1915 cannot help but be evident to any one who will glance over the pages of the index. Hardly any medical or surgical subject of importance has failed to receive some attention during the year. As a consequence, the medical man who binds the current volume of AMERICAN MEDICINE with its index will find that he has a remarkably complete compendium of modern medicine and a wealth of material on topics of current medical interest that will serve as a fairly reliable mirror of medical thought during 1915.

At any rate, we doubt if any one friendly disposed to AMERICAN MEDICINE can study our annual index without agreeing that we have some reason for feeling just a little proud of the work done during the past year.

We are also proud of our list of contributors. As one of our good friends expressed it, "it is almost a list of 'Who's Who' in medicine in England and America." Of course this is exaggeration pure and simple, but just the same it is a splendid list of men

who are helping to shape medical thought to-day and carry medicine closer to the goal of accuracy and exactness.

The foregoing words are not written with any idea of boasting or "blowing our horn." Rather have we called attention to the work of the past year as an earnest of what—God granting us health and strength—we hope to do during 1916.

Announcement.—It is with a deep sense of our good fortune that we announce that Dr. Ira S. Wile has been appointed Associate Editor of AMERICAN MEDICINE. There is no necessity to say much concerning Dr. Wile. His exceptionally fine work as editor of the *Medical Review of Reviews* for several years past has made him known as one of the most graceful, capable and interesting editorial writers in the country. Broad and open minded in his attitude toward all of the great medical questions of the day, Dr. Wile yet never fails to express his opinions with that degree of conservatism that saves future explanations and regrets. Frank in his judgments, firm in his convictions and forceful in his expression, Dr. Wile is none the less ready to listen to argument—and accept it, too, when his judgment shows it to be sound and correct. How well Dr. Wile is fitted for editorial work he has abundantly shown in the quality of the service he has rendered the *Medical Review of Reviews*, which under his direction has been one of the few medical journals of the country with a definite and constructive editorial policy. We might go on and say a great deal more about Dr. Wile that would further emphasize our good luck in having been able to secure his services. We have already said much more than Dr. Wile would countenance if he knew about it, but as this will be the only chance we shall have to convey to the readers of this journal the regard and esteem we hold for our future associate, we have taken advantage of it. In conclusion suffice it to say that Dr. Wile is a capable and skillful physician, a well posted and conscientious citizen, a well qualified and trained editorial writer and above all a man with high ideals. AMERICAN MEDICINE is fortunate.



CLINICAL EFFECTS OF ASPHYXIATING WAR GASES.

BY

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Nature of the Gases.—The asphyxiating gases hitherto used in the European war consist mainly of chlorine and occasionally bromine. The former is readily generated from bleaching powder, is of a yellowish-green color, and is two and a half times heavier than air. Bromine is still heavier and is of a yellowish-red color and is obtained from the mother liquors in the Stassfurt Potash Works. The gas is projected from cylinder tubes and usually appears in the form of a greenish-yellow smoke, which floats slowly along with the wind close to the ground and is readily visible for a considerable distance. On May 25th the chlorine gas-cloud rose in places to a height of no less than forty feet over a five-mile front.

The Effects of the Gases.—The main effect is to produce an acute irritation of the respiratory mucous membrane, resulting in an outpouring of thin muco-serous fluid which threatens to drown the patient in his own secretions, so that there is asphyxia with extreme cyanosis. Probably there is also some primary asphyxia due to spasm of the glottis. The intenseness of

the irritation may be judged from the fact that not only is there smarting of the eyes, vomiting, violent coughing, and choking, but even the soldiers' buttons turn green and their bayonets black when the gas reaches the trenches comparatively undiluted. After death tenacious, frothy fluid is found in all parts of the lungs, filling up the trachea and the large and small bronchial tubes.

Even in favorable cases, when cyanosis begins to disappear the respiration continues hurried and panting, and it is believed by some that an acid condition of the blood is produced (acidosis). The point is now being investigated and it is possible that the panting respiration may be of a specific nature.

Military surgeons have stated that gas poisoning has produced the worst phases of suffering caused by the war; so much so that at casualty field stations soldiers are frequently seen rolling in agony and praying to be allowed to die so as to be put out of their misery. Many are killed outright in the field by the asphyxiating gases, and Captain Bertram in a letter to the *Lancet* states that he saw with his own eyes on one small stretch of road twenty-four unwounded men lying dead from the effects of the gas.

In the rare civilian cases of acute chlorine poisoning, occurring accidentally in chemical works, the symptoms are similar to those produced by the asphyxiating gases used in the present European war. There are the

same intense fits of coughing, with asphyxia, leading frequently to unconsciousness, and these symptoms may grow worse and worse until death ensues in from twenty-four to forty-eight hours.

Degrees of Gas Poisoning ("Gassing").—The severity of the cases depends on three factors: (a) The *concentration of the gas* (whether encountered comparatively undiluted or largely diluted with air), (b) the *duration of exposure*, and (c) the *efficiency of the respirators* and the care with which they have been applied.

From a clinical standpoint the cases may be divided into three groups: (1) Mild cases, (2) moderately severe cases, and (3) very severe cases.

(1) *Mild cases.*—The men belonging to this group have smarting and pain in the eyes, headache, occasional vomiting, frequent painful cough, and in some cases greenish viscid expectoration. There is generally distaste for food, which is nauseous and tastes of gas. There is, however, no definite cyanosis or asphyxia, and the symptoms tend to disappear, with the exception of frequent respiration, which lasts for some days.

(2) *Moderately severe cases.*—In the moderately severe group the patients are definitely ill, with severe headache, vomiting, cyanosis, quick panting and painful breathing of a strangling nature, causing acute discomfort. They are often drowsy, and the symptoms tend to get much worse at night. There is generally some fever, the temperature rising to about 100° F. Broncho-pneumonia—mild or severe—is a not uncommon sequela. Many of these cases ultimately recover partially or completely with careful treatment.

(3) *Very severe cases.*—In the very severe group there is the most urgent dys-

pnea and marked asphyxia. The faces are blue-black, and the patients suffer agonies, with rapid pulse, gasping or strangling breathing, constant fits of coughing, and hoarse rattling voices. Semi-consciousness often supervenes and may pass on to unconsciousness and death. In one such case the surgeon resorted to bleeding, and the blood removed was intensely dark, and clotted with remarkable rapidity; no relief being obtained, oxygen was administered without benefit, and this patient died within 48 hours from the time of being exposed to the fumes. In cases not immediately fatal, acute broncho-pneumonia and even pulmonary gangrene are frequent sequelae.

Stages of Gas Poisoning.—Gassing and its effects have been divided into three stages: (1) a primary asphyxia, due partly to the irrespiratory nature of the gas, and partly to spasm of the glottis; (2) secondary asphyxia, due to the outpouring of fluid into the bronchial tubes; and (3) acute bronchitis and broncho-pneumonia.

I have already described the symptoms of the first two stages in referring to the degrees of severity. It is of patients in the third stage that we have had most experience at home. The majority of such cases that have reached England have exhibited symptoms of a mild bronchitis, but there has been a fair proportion of cases of severe bronchitis with broncho-pneumonia, and several have proved fatal. I recently saw a severe case of acute capillary bronchitis and broncho-pneumonia at one of the London military hospitals. The patient had the appearance of a man suffering from an attack of asthma. He had orthopnea and was propped up with pillows, breathing about 50 respirations per minute, with rapid pulse and evening temperature up to 102° F. His voice was somewhat husky and speech was

a distinct effort. There was not a square inch of his lungs over which rhonchi and crepitations could not be heard, and in certain areas there was evidence of patchy pneumonia. The expectoration was no

after his recovery from bronchitis, still has periodic attacks of burning pain referred to the mid-sternal region and back. I have also seen cases of pronounced neurasthenia consequent on the nervous shock produced



Bain News Service.

PROTECTION AGAINST GAS BOMBS—GERMAN.

longer watery, but had become yellow and purulent. However, after a prolonged illness he recovered.

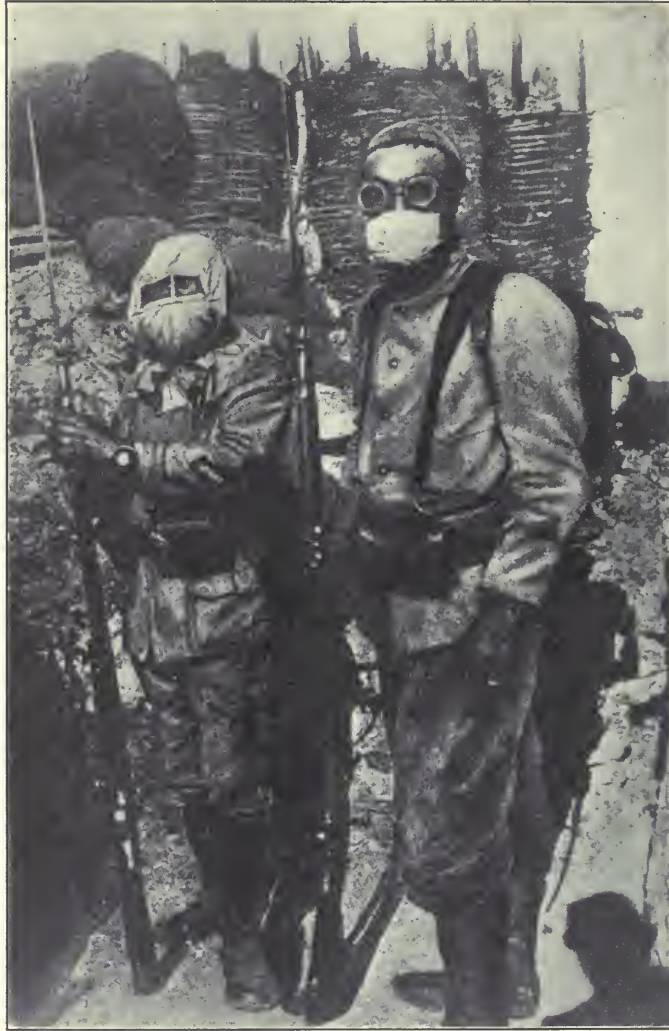
As regards sequelae, I have a gassed soldier now under my care, who three months

by the gases, rendering them quite unfit for military service.

An important report was presented early last June to the Académie de Médecine of Paris, by Dr. R. D. de la Riviere of the

Institut Pasteur and Prof. J. Leclercq of Lille on the effects of asphyxiating gases. They had under observation in hospital at Calais 112 soldiers who had been exposed to gas at Langhemarck. As the distance

membrane caused abundant expectoration, which was soon tinged with blood. Those who could not fly died vomiting blood. Others, much prostrated, crawled to the rear, vomiting and expectorating bloody



Bain News Service.

FRENCH HELMET MASK.

from the fighting line is short they were able to examine the patients a few hours after the intoxication.

"The irritation of the respiratory mucous

urine. On admission to hospital the eyes were watering and the eyelids were swollen. The cheeks and lips were violaceous, the features were drawn and the nose was

pinched. The patients were harassed by dyspnea and incessant cough. Some complained of a stitch in the side. There was abundant rosy, frothy expectoration, sometimes bloody. Speech was painful and jerky. The majority of the patients presented symptoms of inflammation of the whole respiratory tract extending to the finest

patients passed concentrated high-colored urine containing much biliary pigment. At the onset the sputum was characterized by desquamative elements and some polynuclear cells, but soon it was modified so as to indicate congestion and, in some cases, gangrene of the lungs."

Treatment (Alleviative and Curative).



Bain News Service.

RESPIRATOR FOR BRITISH SOLDIERS.

bronchial tubes. In some the condition was not grave, but in others the pulmonary lesion was severe and took the form of broncho-pneumonia or gangrene of the lungs. Two patients presented the phenomena of hemoglobinuria for several days. Several had persistent albuminuria. Most of the

The cases of bronchitis and broncho-pneumonia are treated in our hospitals by the ordinary methods. Antiseptic inhalations have proved useful and good results have followed the administration of iodide of potassium, creosote and belladonna. It is during the early stages of asphyxia that special

measures are required. In the very severe cases treatment is often of little avail. Bleeding, followed by transfusion with normal saline solution, has been tried, while oxygen¹ has been administered from cylinders. The asphyxia is largely due to lack of oxygen, and its subcutaneous injection has been resorted to—a method which has been found useful in not a few cases. It has been recommended that where possible patients should be treated in the open air to ensure a sufficiency of oxygen, that the body should be kept warm, and that a minimum of food should be given. The nausea and distaste for food render this last injunction easy to carry out. It has been recommended also to spray the air with adrenalin to allay the swelling of the lining of the bronchial tubes, and it has even been suggested that the adrenalin might be applied directly to the bronchial tubes.

In mild cases a slight bronchial sedative and plenty of fresh air is all that is required. In the rather more severe type of cases belladonna or atropine, with the view of diminishing the profuse bronchial secretion, has been recommended, while emetics have also been found useful.

Mr. Henry Brunner, the well-known chemist, suggested the inhalation of alcohol by means of a cloth moistened with whiskey, brandy, rum, or rectified spirit. It is known that alcohol absorbs chlorine with avidity, and the compounds formed by the interaction of the two substances, viz.: chloroform, chloric ether, chloral hydrate, etc., are practically harmless. It is doubtful, however, if such substances would be formed under these conditions. Mr. Brunner's son, who was once accidentally gassed in a

chlorine works, found the inhalation of eau de cologne extremely soothing. He considered however the treatment by alcohol inhalation as merely palliative, and unlikely to have any real remedial effect in serious cases.

Preventive Treatment.—This is far the most important aspect of the question. Gassing may be prevented in one of two ways:

(1) By *preventing the access* of the gases, e. g. by precluding their entrance into the trenches.

(2) By *neutralizing the poisonous gases* before they are breathed into the lungs.

(1) *Prevention of access.* In the trenches, gases can be used only when the direction of the wind is favorable and any change in the direction at once blows the gases back towards the trenches from which they have been projected as has occurred with disastrous effects to the projectors on several occasions. Special precautions will, therefore, have to be taken by the army not on the windward side. The dilution of the gas is more or less proportionate to the distance traversed, and by the time the gas is twenty feet away from the discharged cylinder, the ratio, according to Sir Hiram Maxim, is one volume of chlorine to five volumes of air. If a soldier were to breathe a chlorine mixture of even one in twenty he would not live a few minutes, but by the time the fumes have reached the opposing trenches the dilution is about one in a hundred.

Sir Hiram Maxim has been engaged for some time in devising a means of combating the poison gases. He has designed a simple apparatus, the object of which is to cause large and rapidly-spreading fires by means of specially-designed incendiary bombs in the

¹ In the French official report, dated July 10th, is mentioned the capture at La Fontanelle of an oxygen apparatus intended by the Germans for use against the effects of poison gas.

path of the advancing gas at a distance of several hundred yards from the British trenches, and by this means, since the heating of the air must cause an upward rush, to drive the gas up out of harm's way.

In *The Times* of August 11th, Sir Hiram explains his invention as follows:

"Chlorine gas at one atmosphere of pressure is two and a half times as heavy as air. In escaping into the air it very quickly becomes mixed with a large quantity of air, so that by the time it reaches our trenches it is, as a rule, less than 1 per cent. but this is quite strong enough to prove fatal. In most cases we find that the air that has only one-thousandth part of chlorine is the one that has done the most harm.

It occurred to me some months ago that, if a fire could be produced between the gas and our trenches, the rapid upward movement of the air would take the chlorine along with it, and this is quite true. The bombs that I made were to be thrown by hand, but it was found that, in order to be thrown any distance, they had to be made quite small, and, moreover, they could not be thrown as far as the officers wished. I delivered a hundred to the government for experimental purposes. A few of these have been tested, and it was found that the fire should be greater and farther away, so I have designed a very much simpler and larger form. The firm in London who propose to make them have designed a machine for throwing them with great accuracy a distance of 300 yards, which will be quite enough. By this means a fire of any size may be produced, and if the fire is large enough the gases must be dissipated.

The first bombs I designed involved the use of petrol, but it was thought that the consumption would be so large that there might be a shortage. I have therefore been experimenting, and am now in possession of a liquid that does just as well and only costs half as much, while the supply of it is unlimited."

It would be a great matter if this invention were to succeed in actual warfare, as it would save an immense amount of suffering.

(2) *Neutralization of the poisons.*—It has been found that most of the asphyxiating gases are acid, and that therefore they can generally be neutralized by the use of an alkali. Common washing soda is quite efficient for this purpose. Respirators soaked in a 10 per cent solution of washing soda will enable a patient to breathe in an atmosphere contaminated either by chlorine, bromine, nitrogen, oxides, or sulphurous acid gas. The German soldiers have been equipped with respirators containing sodium hyposulphite, which neutralizes either chlorine or bromine, and solutions can be readily obtained containing both carbonate and hyposulphite of soda in certain proportions. The *Chemist and Druggist* on June 5th recommends a formula in which the proportion is 15 oz. of hyposulphite and 5 oz. of sodium carbonate. The war office solution is supposed to contain 3 parts of hyposulphite to 2 parts of the carbonate. The French Academy of Medicine recommends 5 parts of the hyposulphite to 1 part of the carbonate dissolved in glycerine and water.

The chlorine unites with the soda, forming sodium chloride, or common salt, which is harmless. The respirators can be kept moist for many days by carrying them in impervious bags resembling sponge bags, which are now supplied to the soldiers, or they may be carried dry and damped when required.

On May 24th certain British battalions escaped practically unscathed owing to the fact that their commanders, warned by the gas surprise at Ypres a month earlier, had initiated respirator drill and given their men the most stringent instructions about keeping the respirators moistened.

Various patterns of respirators can be obtained. The official British one consists of

cotton-waste soaked in lotion and covered with black gauze netting, which reaches over the whole face so as to cover the eyes. The Institute of Hygiene respirator consists of a combination of cotton-wool, layers of flannel, and towelling, with a separate face-piece of black net, which covers the whole of the face. The fastenings of the respirator being drawn down under the chin until required, and it can be slipped on to the mouth in a second, covering the nostrils, while the black net is specially intended for the protection of the eyes, and may be drawn up on the forehead ready for use and can be instantly pulled down over the chin. Many respirators are practically impervious masks, with eye-pieces of talc and perforations over the medicated mouth-piece. These head coverings and masks are found to afford most efficient protection.

THE PROBLEM OF THE MEDICAL EXPERT WITNESS.¹

BY

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The problem of the medical expert witness is his personal equation and the solution of that problem is not to be found in the statutes of the state or nation or in the codes of ethics of medicine or law but in the application of the square deal as between him and his neighbor, either because he is by nature just or because the exposure of his injustice puts an end to his practice of distorting medical truths.

The medical expert who merits the

censure of the public is a creature born of medical conceit and legal ignorance and has had for his nurse an unscrupulous lawyer. A prominent New York lawyer once said that an incompetent or dishonest medical witness could not break into a legal case with a burglar's jimmy unless an incompetent or dishonest lawyer opened the door and, while this statement bears the marks of a "bull" it carries a world of truth with it: hence, whatever our efforts to rehabilitate the medical expert we may not hope to restore him to his former dignity and usefulness until and unless we have the earnest cooperation of the bench and bar.

The thoughtful lay citizen who seeks the betterment of his kind turns hopefully to the public press as the great teacher of the times and the earnest medical man who feels keenly the contempt in the public mind for the representatives of his order who appear in the courts turns hopefully and prayerfully to the medical press for help in correcting the conditions which exist in the relation of medicine to law, a relation which was never so pressing or so important as it is in these times when, by reason of abuse, it has come to be the custom to insinuate a medical issue into a legal case, if at all possible, so as to cloud the issues of fact, whether those issues involve responsibility for crime, the capacity to contract for or dispose of property or the degree and permanency of injury, real or fancied, in an action in negligence, and because I realize the danger which threatens it from the prostitution of medicine in the courts and because I have confidence in the sincerity and efficacy of the medical press I welcome this opportunity to address you. The medical press in this country is an untrammelled power for good, its editors are lovers of mankind by reason of their train-

¹ Read by invitation before American Medical Editors' Association, Oct. 19, 1915.

ing and experience in medicine and they are big enough and broad enough to take a determined stand on this problem of the medical expert and powerful enough to make their censure reach the hearts of the medical and lay public and, while commending and encouraging the honest medical witness to deal fairly with his fellow citizens before the civil and criminal tribunals of the land, will force the dishonest medical witness to mend his ways because the light of exposure and ridicule will make it dangerous and unprofitable for him to do otherwise.

I know the temptation is very great for a medical man on the witness stand to make display of his special knowledge before a jury or layman for, while the very nature of his lifework, and his heroic struggles with disease and death, clothes him with majesty when he enters a sick room, he is conscious when he appears in court that he is an exhibit to be analyzed, diagnosed and indexed by a jury of layman who, under other conditions, would stand in awe of his special knowledge and if he be not as careful to subordinate his pride and his personal equation to his sense of justice in the court room as he is to subordinate his pride and his sympathy to his sense of reason in the sick room he will fall into the error of making his partisanship do violence to the rights of his fellow man; and his victory over the opposing counsel who tries with paucity of medical knowledge to keep him in the narrow path of medical truth may prove disastrous to the medical witness and discreditable to his order for out of the encounter may be born a medical "expert" witness who under the shrewd manipulation of an unscrupulous lawyer will become the gunman of the medical profession and bring his whole order into disrepute and, to our hu-

miliation as medical men be it known, this type of medical witness is in the minds of judge, jury and public when a medical question is involved in a civil or criminal case.

So far as the unfortunate victim of his act is concerned the man who flourishes a gun recklessly and shoots a bystander because "he did not know it was loaded" is just as dangerous as the man who "picks his gun" and goes after his prey; therefore, when a medical man takes the witness stand and qualifies as an expert he is charged with that degree of knowledge of his subject which a reasonably careful and prudent medical expert would possess or seek to acquire and if he has evolved a theory in regard to a medico-legal case and has failed to submit that theory to careful analysis in the light of his own experience and the experience of others he must be judged by his fruits; and his sin of omission may have as serious consequences for a litigant in the civil or criminal order as would the sin of commission of one who deliberately ignores a medical truth and testifies to a lie. Let me illustrate this:

A man at a seaside resort, in a wet bathing suit, swinging by a wheel on an aerial wire stretched from a bathing pavilion to the ocean fell on the sands and dislocated his hip; he was in the hospital thirty days and home, convalescing, thirty days and after a heavy mid-day meal was found dead in his parlor; a physician, without an autopsy, certified to "paralysis of the heart from cerebral embolus" as the cause of death; by the time a civil action in negligence against the owner of the bathing house came to trial the diagnosis had developed this astounding detail—that "a plug of hemorrhagic material, arising at the site of the dislocation, (sixty days after date) had entered a vein and found its way into

the artery leading to that center in the brain which presides over heart control, thereby producing paralysis of the heart," a very startling theory for a medical man to contemplate in the light of his study of the circulation of the blood and the process of inflammation and repair, yet a very impressive theory for a lay jury to rule upon and a very difficult one for a lawyer to combat. If I had not previously trained him in the circulation of the blood and the process of repair so that he was able to bring out on cross examination the utter improbability of any such plug existing sixty days after the accident, or being able to make its entrance into a vein without the aid of an auger or, granting the absurd hypothesis to this extent, being able to pass the pulmonary circulation with any greater ease than a half-inch diameter eel could pass through a quarter inch diameter pipe and while a competent cause for death from chronic interstitial nephritis was evidenced by a urinalysis on the day of his admission to the hospital which persisted throughout his stay, the hospital record, material as it undoubtedly was and distinctly relevant to the issues involved, was incompetent because the man who had made it was not available to identify and interpret it and the defendant's only hope for justice in this suit for fifty thousand dollars was in the preparation of a hypothetical question which would enable me to answer that upon the facts in evidence and assumed to be true I could not state what caused the man's death because they were insufficient on the face thereof, which paved the way for a further question as to what, if anything, would render the facts assumed sufficient, and the answer "the findings of an autopsy as to the condition of the vital organs" when the further question WHY? enabled me to meet

the medical issue fairly by describing the operation of organic disease of the heart and kidneys in causing sudden death and to submit among other theories the effect of cold air on a wet body rushing through it causing, in a nephritic, sufficient circulatory change to precipitate a slight uremic seizure which relaxed the bather's hold on the wheel and caused his fall and dislocation. And a fatal uremic seizure as the cause of his sudden death evidently impressed the jury as a more reasonable explanation, for their verdict was for the defendant and rightly so. I did not then and do not now believe that the plaintiff's doctor in that case was actively dishonest but that fine academic distinction could hardly have been appreciated by the defendant if the verdict had been adverse, but your impassioned judgment and mine would recognize that the doctor had made an error of judgment in the first instance and his pride and his personal equation restrained him from clearing the atmosphere between his patient's widow and his fellow citizen.

Now, let us suppose that that man had not died as the result of that fall but had gotten into an argument with an acquaintance in the course of which the acquaintance had made threatening gestures and had said, in the presence of a third person, that that man was "not fit to live" and no more was seen of the threatened man until his body was picked up from the water when, in the course of an autopsy not a dislocated hip but a fractured skull was discovered; or let us suppose that no mark of external violence whatever was found and the doctor who made the autopsy certified the cause of death as "fracture of the skull" in the first hypothesis and "strangulation without marks" in the second and, while recording "small contracted kidneys" or "large con-

gested kidneys" ignored these pathological conditions which would call for elimination as a potential natural cause for death before a criminal agency should be read into the record . . . and do not suppose but understand that we have a very necessary but a very uncomfortable quasi-presumption in law which is known as the "rule of exclusive opportunity" which would call for the arrest of the dead man's argumentative acquaintance as the last person seen with him in life if a criminal agency was found in his death. And suppose in the trial of this defendant for murder in the first degree, which is punishable by death, certain physical facts appeared in evidence, such as clumps of hair and relatively fresh blood on the stringpiece of a dock near where the body was found, which would suggest a fall into the water occasioned by a uremic seizure and the head of a dying or dead man striking the stringpiece and fracturing the skull . . . or that there appeared in evidence a physical fact such as froth issuing from the nose at two periods, immediately after the recovery of the body and within ten hours thereafter which should indicate to the medical mind that there had been no traumatic interference with the breathing apparatus, and in the face of these conditions a medical man on the witness stand persists in assigning a criminal agency as the cause of that death, can we blame the bench and bar and the general public for entertaining a wholesome distrust of the medical expert who holds human life so cheap that he will let his conceit in a theory, or his pride, so influence his personal equation that he can restrain a natural impulse to arise in open court and cry out in the name of justice that a strong probability exists that he has made a mistake and that he

is not willing to let his testimony jeopardize the life or liberty of the innocent.

The influence of the medical press can best be exercised, I believe, by fearlessly exposing these wretched abuses of the science of medicine as they appear in our courts from time to time and a working committee of your body which would keep in touch with important medico-legal cases as they arise and furnish your members publications with authoritative data upon which they could predicate editorial comment, would go very far toward shaping the conduct of medical men and medical societies toward those members of the profession who are scandalizing our sacred calling. But we must bear in mind that however strong our denunciation may be it will be ineffectual with the deliberately dishonest and more direct means must be sought for their correction and control, and I know of no more efficient method than by interesting the legal press in encouraging and urging lawyers to acquire a working knowledge of the basic principles of medicine and to prepare the medical phase of a case with as much care as they do the purely lay issues of fact, so that they may be equipped to approach the examination of medical witnesses intelligently. It is a source of very great regret to me that in our own State of New York the Court of Appeals has seen fit to eliminate from the courses in law the subject of legal medicine so that a lawyer must approach a medico-legal case with no greater preparation than can be had in a few hurried conferences with a medical adviser and, while we have a number of medical men who have become lawyers within the past several years they are unavailable, either because the litigants can not afford to employ additional counsel or because the lawyer in charge of the case is very naturally jealous

of his prestige and hesitates to share the glory of his case with medical counsel.

At this point I would like to direct your attention to a very grave situation in regard to the employment and compensation of medical experts. We are all agreed that a laborer is worthy of his hire and that the medical expert has a duty to his family which precludes the use of his time and talents for the benefit of others without compensation and it will not be difficult for us to agree that, while it frequently works a hardship, nothing can be done to help a plaintiff in moderate circumstances who is suing a wealthy corporation or individual in an action in negligence; or a poor man in an action against an executor on the validity of a will, but in the criminal order, where a man is charged with a crime and is unable to employ medical assistance in the preparation of his defense, he is in a most unfortunate plight if a medical question be involved; the prosecuting officer is empowered to employ such aid at the expense of the state and if that aid were competent and honest and judicial, as we would wish him to be, the cause of justice would be fully served as between the people and the defendant. But if he be inclined to partisanship rather than the square deal, if he be a good vote-getter rather than a scientist, if he be a crafty general who seeks to win a victory over his adversary then, indeed, is the defendant to be pitied and only through pity for the underdog may he hope for acquittal at the hands of the jury, unless there are those on that jury who can measure the expert for what he too frequently is—a biased, dishonest witness worthy only of their contempt. And my anxiety for the defendant without means is not unfounded for I have heard a prosecutor's medical witness state that he could and did determine the

presence of human blood on a coat by measuring the red cells with a 1,200 magnification and without the aid of any further and more accurate measuring apparatus, despite the closeness in measurement which exists between the red cells of man and those of domestic animals. And in the same case another medical expert for the prosecution testified to the presence of human blood on a garment belonging to the defendant and upon cross examination I found that his reagents for the biological tests had been made by a laboratory assistant and not under his own eye and he was actually determining the life of a man on trial for murder in the first degree on the sheerest hearsay that the reagents handed to him were biological test fluids; and on further cross examination he was obliged to admit that he had made no effort to eliminate deer's blood and knew absolutely nothing about the relative response to microscopical and chemical and biological tests of deer's blood and human blood and this in face of the fact that the defendant had stated immediately upon his arrest that the coat was his and had been worn while carrying a wounded deer and that the stain was the blood of a deer and despite the further fact, which I learned later, that the prosecuting officer had on three separate occasions reminded the doctor to determine this question of the presence of deer's blood on that coat and because the case against the defendant was strong or weak, depending upon the medical testimony, the court granted our motion to dismiss on the ground that the prosecution had failed to make out a case and did not ask us to put in a defense . . . but that you may know how near that defendant was to conviction and probable execution if the cross examination had not revealed the incompetency and in-

sufficiency of the medical evidence I want to tell you that one of the jurymen, a young man, American born and 35 years of age, in congratulating me upon the release of my client, said he was lucky it did not go to the jury for he thought they would have convicted him and when I asked him to tell me in the name of reason on what testimony he said "Well, the man was dead, wasn't he? somebody killed him."

I am quite sure that my talk is not a revelation but a reminder and that your own experiences will make you quick to realize the danger which this problem presents and eager to do your best to limit, if not eliminate, it and that the medical press of this country will be a unit in a propaganda to readjust this relation between medicine and law and that the time will soon come when we may pick up our morning paper confident that we will not be greeted by a slurring account of the dishonesty or incompetence of our fellows in the profession, whose activities bring them into the courts, and we may not be any longer forced to bow our heads in the humiliating consciousness that these men are of our order and have wrought the bar sinister into its shield.

Pneumonia.—Widmer (*Critic and Guide*) recommends the removal of pneumonia patients from the bed to an arm-chair for four to six hours each day. It is especially beneficial in patients with dyspnea and cardiac enfeeblement. Expectoration is facilitated, breathing becomes easier, and the pulse and temperature fall.

Carbolic Acid Poisoning.—The best antidote is alcohol (*Med. Fortnightly*), and one should be sure to give enough, and give it quickly, for carbolic acid is a very rapid poison. Another remedy is Epsom salts, which may be given in case there is no alcohol at hand.

THYROID INSUFFICIENCY.¹

BY

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It is only within the last twenty years that the internal secretions have been at all understood. A wide interest now attaches to this highly important phase of modern medical science. To the present time the thyroid gland and its activities have occupied the first position. The accurate observations of Hertoghe, Leopold-Levy, Gull and Ord have furnished results having a very definite clinical significance.

The condition called myxedema is an acknowledged pathological and clinical entity, but the significance of the lesser changes in thyroid activity are not so well established. An effort is being made to measure the influence of the thyroid for good or bad in other abnormal states. The thyroid, of all the ductless glands, because of its widespread influence and highly important functions, offers the richest field for study, and particularly because the proper functionation of the whole endocrine system apparently depends on the adequate work of this same organ.

For the morphological and functional perfection of the somatic cells a normal amount of the proper secretion of the thyroid is essential (Hertoghe). When a condition of hypersecretion or hyposecretion exists certain pathological changes, affecting few or many tissues, develop.

The term "thyroid insufficiency," proposed by Leopold-Levy, applies to "all morbid syndromes arising from abolition or diminution of the thyroid parenchyma," and

¹Read at the one hundred twenty-fourth anniversary of the N. H. Medical Society, Concord, N. H., May 18, 1915.

to chemical changes in the thyroid secretion. When there is absolute lack of development, or total extirpation of the gland, complete suppression of function follows. This condition is described as maximal thyroid inadequacy or myxedema. The symptoms and pathology of myxedema are sufficiently marked for easy recognition but the lesser grades of insufficiency produce changes that are more easily overlooked.

The specific activity of the thyroid may be summarized as being concerned in the proper bone development of the child, the proper mental development of the adult, the proper relationship of the amount of fat to the rest of the body, the health of the skin and its appendages, the health of the teeth, the menstrual and maternal functions of women, and the nitrogenous metabolism of the body (Osborne). Practically every function depends in a measure upon the integrity of the thyroid, as a review of its activities shows its widespread influence.

Chemically the thyroid hormone has been shown to consist of phosphorus, sulphur, arsenic, nucleo-albumins and about 0.2% of iodine in organic combination.

Not all the many phases of conditions resulting from thyroid insufficiency can be caused by this one factor acting alone, though this is the predominating factor. The pituitary, the thymus, the ovaries, as well as the pancreas, liver, testicles, etc., play roles of varying importance. Many symptoms depend upon changes in these bodies. How far myxedema is a multi-glandular syndrome cannot be estimated, but stimulation of the thyroid removes most of the trouble.

Etiology.—Predisposition is doubtless at the bottom of all subthyroidic states. It may be inherited or acquired; there is dependable evidence that subthyroidic mothers

give birth to children with impaired thyroidic chemistry. Surgical intervention may be the cause. A large number of diseases exercise a debilitating effect on the thyroid, notably acute articular rheumatism, syphilis, scarlet fever, whooping cough; intoxications of all kinds, alcoholism, plumbism and others produce a severe strain on the thyroid; the incidents of the sexual life of women, menstruation, pregnancy and the menopause are potent factors in the causation of inadequacy. It seems, however, that the clinical picture is frequently presented as the result of a combination of causes, of which the fundamental factor is heredity. Slight infections and transitory intoxications act as provoking causes upon an already poorly developed organ.

Hypothyroidism is a condition which may be encountered at any period of life from infancy to old age.

Hertoghe believes that there is some connection between intestinal stasis and thyroid instability. McCarrison claims that the failure of the fetal thyroid to develop is due to the passage through the placenta of bacterial toxins elaborated in the maternal intestinal tract.

Pathology.—Infiltration of the tissues is the constant lesion of hypothyroidism and it may affect any tissue or any organ. The accumulation of a substance whose chemical nature, according to Swale Vincent, is not exactly known, gives rise to a certain form of edema; for all practical purposes the infiltrating substance is composed of fat and mucin and it is always present in every case in some part of the body.

The skin changes are as though a semi-elastic cement had been poured into the deeper layer of the corium, the swelling making the body stiff; when fully developed it is uniform over the whole body and it

is never varied by position or movement; does not pit on pressure, and usually occurs first on the face, especially about the eyelids, the chin, the malar bones. The eyelids are particularly affected and become swollen with solid wrinkled edema, which produces a characteristic narrowing of the palpebral clefts. In other cases this edematous swelling becomes pendulous, especially about the breasts in males.

In early cases in blondes the edema is nearly transparent, but when punctured with a needle no fluid escapes; in some long-standing cases a true edema may be superimposed.

Mucoid swelling is a late development of the disease and it is important to diagnose it before this appears. Blue-red dilated injected vessels over the malar bones usually precede the development of swelling.

Infiltration of the tissues being the constant lesion of thyroid deprivation, the symptoms depend solely on the organs involved. Nerve involvement gives rise to neuralgic pains and possibly neuritis; when the central nervous system is attacked, vertigo, headaches, and even coma of the uremic type is produced. Muscles and connective tissue structures may be selected with painful consequences; bones fracture easily and fail to unite.

Dermal involvement lesions are, in the main, familiar to every one but not infrequently eczema, psoriasis, alopecia and seborrhea have their origin in a skin that is impaired through infiltration. Cardiovascular lesions cause false angina; pulmonary changes are followed by dyspnea, cough, and asthma.

Authorities differ as to the influence of hypothyroidism on the menstrual function. Hertoghe believes that menorrhagia means a weak thyroid. Barr and Williams take

the view that amenorrhea means the same thing.

Symptoms.—The presenting symptoms of thyroid insufficiency should be borne in mind constantly and *every patient's thyroid should be investigated as a routine measure* just as carefully as the heart and lung condition is estimated.

From the widespread influence of the thyroid the symptoms of insufficiency of its hormone must necessarily be many and varied. Symptoms may be antagonistic, in this instance, even though the human economy is operated upon by the same pathological factor, provided that factor is thyroid secretion in any of its abnormal developments, whether excess, total deprivation, scarcity or alteration of its chemical contents.

There are certain definite symptoms that are highly suggestive of the subthyroidic state, as for example, subjective sensation of coldness possibly located in one limb, or in the back alone, coming on particularly after meals, perhaps slight or perhaps so marked that the patient says he is never warm; increasing tiredness and lethargy; a loss of interest in work; possibly a cough, a neuralgia, or insomnia.

Mental dullness is common, "a born-tired" condition, an altogether common complaint, nasal obstruction, particularly with muffled voice, a chronic headache or backache, swelling of the face or extremities, should lead one to investigate further.

The appendages of the skin suffer; the nails are brittle; their growth slow; sweat and sebaceous glands atrophy and the skin becomes dry; the hair gets thin, dry and brittle, loses its lustre and the scalp gets dry and scaly.

Loss of vigor is seen in the very early stages. Everything slows down, work be-

comes a burden; metabolic changes take place throughout the body. The sweat glands function slowly; the skin desquamates slowly; the nails grow slowly; the patient speaks slowly; thinks slowly; acts slowly.

In women should be added amenorrhea; in women past the climacteric, obesity and asthma. Fatigue is very common, especially in the morning; constipation is the chief intestinal symptom; anorexia occurs particularly in young patients. In older men arterial hypertension, dizziness, headache, symptoms of angina and digestive disturbances appear. Men who grow old rapidly are usually subthyroidic.

Children who have enlarged tonsils or adenoid hypertrophy or enuresis, or who are backward in school should be investigated carefully.

Many other symptoms are suggestive, as loss of the outer third of the eyebrow, epilepsy, especially that occurring at the menstrual period, adiposis dolorosa, acute eczema, etc.

Some objective signs that will be noted are the subnormal temperature, which may be several degrees below 98.4 even in the late afternoon, slow pulse, narrowing of the palpebral cleft, the flushed cheek with injected capillaries, and the slightly puffy eyelid.

The stigmata of thyroid insufficiency which stamp the individual are small stature with a tendency to obesity, with cold extremities, scanty eyebrows, prematurely gray hair, or alopecia, irregular deposits of subcutaneous fat, occurring over the hips or in the abdominal wall, swelling of the face, especially about the eyes, harsh, dry skin, the eyes dull and expressionless and a depressed apathetic bearing.

Some tissues of the body are far more

susceptible to thyroid influence than others. Ichthyosis, alopecia, eczema, psoriasis, muscular fatigue and neurasthenia may develop in the individual who shows none of the stigmata of thyroid inadequacy and they will be relieved by the stimulation of the thyroid hormone.

Thyroid maldevelopment in early life is said to be the cause of many cases of sterility with infantile uterus. At puberty thyroid scarcity may be sufficient to delay developmental changes and yet present no other symptoms.

One patient, seen three years ago, a girl of fifteen, a sixth grade pupil, had difficulty in keeping up with children four years younger. Her form had apparently developed fairly well but she had never menstruated. Adenoid hypertrophy was present; the adenoids were removed, thyroid extract given and she menstruated in six weeks and has regularly ever since. She has steadily made better progress in school.

That the thyroid plays a large part in the sexual life in women is granted, and any interference with its functionation results in marked changes, ranging from the delayed development of the girl to the obesity of the woman who has just passed the menopause.

Enlargement and excessive secretion is a normal and practically constant concomitant of pregnancy; it occurs as well to a less degree in many women at the menstrual cycle. Some women, exceptions to the rule, who are evidently somewhat subthyroidic habitually, become almost cases of myxedema during pregnancy, exhibiting to a distinct degree facial swelling, mental dullness, subjective sensations of cold and slow pulse. Not infrequently the symptoms of nitrogen toxemia, nausea, vomiting, headache, and arterial hypertension appear.

One patient observed during four succes-

sive pregnancies is an example of this type. In the later weeks of gestation she became typically subthyroidic, the pulse came down to 34 beats per minute; after delivery she rapidly improved. Thus far her children are apparently normal.

Sometimes the pregnancy places a strain on the thyroid from which it does not readily recover. A patient under observation for eight years dates all her trouble from her one pregnancy; previous to that period she had felt perfectly well. In the last days of gestation, when first seen, she was truly a spectacle, with a badly swollen pigmented face on which the dry skin was tightly stretched as though it were about to crack. It has been necessary for this woman to take thyroid extract for one week in each month since.

Another patient seen two weeks before confinement, distinctly subthyroidic with symptoms of impending eclampsia, improved under the use of thyroid and became apparently normal a few weeks after delivery at full term. The baby is being watched for signs of thyroid insufficiency, but has been normal thus far.

The lessening secretion of pregnancy is doubly important and it should be watched for and corrected, as it is agreed that in untreated cases the child is bound to, sooner or later, show signs of thyroid starvation. In the case of the mother, the termination of pregnancy is often sufficient to give the overtaxed organ a chance to catch up with the changes in the metabolism that have been taking place.

Case 1.—Mrs. N. T., 38 years old, weight 178, mother of two boys, twelve and eight years old, said that since her second child was born she had never menstruated normally. The period was preceded by severe pains in the back and limbs, lasting for a week, and the flow lasted but one day;

sometimes there was no flow at all. Investigation disclosed the fact that she wore heavy underwear in the summer, and that increasing tendency to sleep in the daytime was making it difficult for her to do any work. Her skin was dry; powdery scales could be rubbed off it, the hair was coarse and dry; temperature was subnormal. The use of thyroid extract for three months led to the loss of twenty pounds in weight, a complete disappearance of symptoms and normal menstrual flow.

The appearance after middle life, for the first time, of the combination of discomforts we call neurasthenia, proves usually to be nephritis, or arteriosclerosis or hypothyroidism. The declining period of life is, especially in men, the time we may expect a wavering thyroid to fail.

Case 2.—F. L., male laborer, 53 years old, rather phlegmatic type, said he had been unable to work for eighteen months. He had been troubled with insomnia, dizziness, bad dreams, loss of energy, nervousness, nocturia, headache, periods of depression, syncope attacks, choking sensations, and a feeling of chilliness all the time. As he told his story his voice was muffled and speech monotonous. Physical examination showed some pads of fat over the hips and in the abdominal wall, a blood pressure of 175, normal urine, slight edema of the eyelids and slow pulse. His temperature was 97.4 at four o'clock in the afternoon. Thyroid extract was given, with a simple bitter, and a month later there was a decided relief of all disagreeable symptoms, his blood pressure came down to 140 and in two months he was at work. At the end of sixteen months he considers himself a well man.

Case 3.—B. Q., 52 years old, housewife, never pregnant, had "nervous prostration" over thirty years ago during a hard college course; she has never been entirely well for more than a few weeks at one time since. Any unusual strain, either mental or physical, has been followed by periods of ill health with physical and nervous depression for weeks and months; recovery was a slow and painful process. Dizziness and insomnia, exhaustion, loss of initiative, and inability to do any work have kept her posi-

tively miserable for long intervals. Last year she noticed a huskiness of the voice and an annoying hacking cough; for her, a singer, a serious matter. Thyroid extract was given and the laryngeal symptoms promptly yielded. Four months ago she was forced to undergo a severe strain in the illness of another member of the family; as usual, a complete breakdown followed. A trial of thyroid was suggested in this instance by the patient's generally listless condition, by the swelling of the face and hands and by the "always-ailing-but-never-ill" state that is so characteristic of mild hypothyroidism. Improvement has been constant; she has made a much more rapid and easy recovery from this illness than has ever occurred before.

Hyposecretion of the thyroid can cause mental derangements of all intensities from simple apathy and indifference to depressant hysteria and actual melancholia; but the milder grades are by far the more common.

Case 4.—O. I., 24 years old, a high school student, has had difficulty in keeping his work up to the required standard; he went to sleep in school frequently; his speech was slow and monotonous; his face was expressionless; his mental attitude was listless. Physical examination was negative save for a pulse of fifty, a subnormal temperature at seven P. M. and a right movable kidney. He has improved under treatment both mentally and physically and has lost several pounds in weight.

Case 5.—I. M., a school boy of ten, known to be mentally deficient, was referred because of increasing symptoms of a nervous character. His mother said he was restless and listless at the same time; during sleep he gritted his teeth badly, enuresis was habitual and he was an incorrigible pupil. Physical examination showed under development and a mild ichthyosis. Improvement has been constant and progressive with a correction of his habits and the systematic use of thyroid principles.

In both the latter cases a mild hypothyroidism has been operating for a long period of time and treatment must of necessity be kept up for a long period.

In asthma it is often next to impossible to assign a definite etiological factor; sometimes a deficiency of thyroid hormone is the cause and relief is obtained by correcting this abnormality.

Case 6.—Mrs. D., 67 years old, mother of six children, had had asthmatic attacks with a troublesome cough for several years; the sputum, mucopurulent in character, did not contain any tubercle bacilli. A subnormal temperature, slight puffiness of the face and complete absence of perspiration suggested the use of thyroid; more relief than the patient had had in years followed a week's trial.

In the same type of case Osborne uses sodium iodide for activating the thyroid with marvellous results.

In three instances patients with longstanding chronic lumbago have been kept symptom-free by the systematic use of thyroid extract.

Arterial hypertension and arteriosclerosis may be prevented by an adequate thyroid secretion. When other means for the relief of hypertension have failed the use of thyroid preparations may prove helpful.

Case 7.—Capt. S., 57 years old, a hard working man and alcoholic, had been forced to give up work on account of increasing dyspnea, throbbing in the head, headache, and anginoid attacks. He had Cheyne-Stokes respiration about half the time. His treatment had consisted of saline cathartics, hot baths, electricity, and a strict diet. His blood pressure for months had been 200. Nine months after beginning thyroid extract, two and one-half grains after each meal, he writes that he is very comfortable and able to do some work.

Chronic migraine is a condition that may be due to hypothyroidism, though the patient may show none of the usual signs of insufficiency.

Case 8.—Mrs. X., 43 years old, mother of two children, had been the victim of migraine since puberty; attacks averaged one in each fortnight. One almost always oc-

curring at the menstrual period. She could not exert herself mentally or physically beyond a certain point without having to lay up for two or three days. A competent gynecologist had expressed the opinion that the pelvic organs were normal; an oculist had corrected a slight refractive error; an internist considered the whole trouble due to intestinal stasis. Treatment directed to its relief, however, did not stop the headache. The patient's kidneys functioned normally. Three months ago thyroid extract was begun; to date there has been but one slight headache, which lasted a part of one day and appeared with the menstrual flow. It was known that the son of this woman was slightly subthyroidic and it seemed not unlikely she might also be.

That more serious conditions than those mentioned, not typical or even highly suggestive of true myxedema may occur is the belief of those who have done the most work in thyroid pathology. Of extreme importance is a type of coma, closely resembling uremia, rapidly fatal unless relieved. Hertoghe reports a case of optic atrophy and blindness; and Granger mentions the case of one of his patients, an opera singer, who had almost complete aphonia lasting over a considerable period. Habitual abortion may be caused solely by a lack of thyroid secretion. In considering children the grave importance of the cretinoid type of idiocy, must be mentioned. The coexistence of goitre and hyperthyroidism in the same patient must be borne in mind.

Diagnosis.—Thyroid insufficiency should be suspected particularly in people presenting the stigmata of this condition, in neurotic individuals, in women who complain of menstrual difficulties, dermatoses or asthma. A careful search should then be prosecuted, with the understanding that a single symptom does not establish a diagnosis; in some cases the diagnosis must be verified by the therapeutic test.

Prognosis.—Whether those who require thyroid extract can ever get along without it is a mooted question; older people and those in whom the organ is permanently damaged probably cannot. In younger patients, before the degenerative period is reached, the thyroid will often be stimulated to function normally and sufficiently for all requirements; this possibility, however, cannot be prejudged, and in many instances the treatment must be kept up indefinitely though a complete transformation takes place in the individual's well-being.

Untreated, progressive cases go on from slight starvation to complete deprivation, requiring, Granger affirms, about six years, provided the cause of the inadequacy obtains. The termination of some cases is in arteriosclerosis and premature old age.

Leopold-Levy says: "Generally speaking, subthyroidic persons are the victims of many and various evils. They are often ailing, rarely ill, and they tend to make the most of their ailments."

Treatment.—Fortunately extracts of the thyroid gland when administered by mouth have the power to carry on the activities of the normally secreting organ; the alterative action of arsenic and the iodides depends upon the power these possess of activating the thyroid hormone.

The administration of thyroid preparations should be under the careful and constant supervision of the physician; the dosage may require frequent changes, for alarming symptoms may develop suddenly. A feeling of weakness or dyspnea, or exacerbation of pain, or tachycardia should lead to stopping it at once for the time being. It should not be given during menstruation; a good plan is to suspend treatment for the last three days in each two weeks. Hertoghe insists that a cathartic

be given during the treatment. Attention should be paid to the general hygiene, especially as concerns the free ingestion of water, the avoidance of much meat and cold bathing.

Iodine, arsenic, sulphur, phosphorus and bicarbonate of soda are said to influence the activity of the thyroid secretion and may properly be used to reinforce the action of the dry extract.

If the thyroid preparation is going to do any good the response will be more or less immediate and one week's tentative trial will serve to clear up the diagnosis. The mucoid swelling is one of the first things to show betterment. The patient usually begins to feel better before there is physical evidence of amelioration of his condition.

It is possible now to obtain thyroid gland preparations accurately standardized and containing a definite amount of iodine in organic combination and these preparations only are suitable for use. The amount necessary to produce results is not large; in most cases, ten grains per day in divided doses is sufficient.

15 School Street.

Emetine in Typhoid Fever.—Frazier's remarkable report of success with emetine in the abortion and treatment of typhoid fever (*Med. Standard*) is already receiving some support. It is claimed that $\frac{1}{2}$ to 1 grain doses of the hydrochloride of emetine daily will cut short an attack in three to six days. It can do no harm to give the method a trial.

Substitute for Mustard Plaster.—The following is immediate in its action and gives quick relief where counterirritation is indicated. Mix chloroform, camphor, and sweet oil, one ounce each. Fold a piece of muslin three or four times, saturate it with the mixture, apply, and cover with dry warm flannel. It will blister in three minutes.—*The Nurse*.

RECENT WORK ON THE BACTERIOLOGY OF RHEUMATOID ARTHRITIS AND ITS TREATMENT.

BY

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In the year 1906 I read a paper, in the Section of Pediatrics, at the annual meeting of the British Medical Association held in Toronto, entitled "The Early Diagnosis of Infectious Diseases by the Recognition of the General Involvement of the Lymphatic Glandular System" (*British Med. Journ.*, Dec. 15, 1906). Since that time I have repeated and enlarged upon this theory and presented a paper before the Canadian Medical Association, held at Montreal, June 7th, 1911, entitled "Scarlet Fever, a Preliminary Note on a Specific Microorganism" (*Canadian Med. Assoc. Journ.*, July, 1911). In June, 1914, Dr. J. Hayne of South Carolina, chairman of the pellagra committee in connection with the 29th annual meeting of the Conference of State and Provincial Boards of Health of North America, held in Washington, D. C., June 19-20, 1914, read a paper for me entitled, "Some Experiments in the Production of Pellagra in Monkeys" (*Reprinted Report of Pellagra Committee, State and Provincial Board of Health of North America*, 1914). Recently at a meeting of the Montreal Medico-Chirurgical Society at which Dr. L. J. Rhea read a paper on "Some Recent Findings in Hodgkin's Disease," in the discussion which followed I made the statement that I had recovered a short bacillus from the enlarged nodes of a patient suffering from lymphatic leukemia. I inoculated a monkey with a broth culture and in 72 hours the glands were enlarged and a large

ecchymosis was present over the abdominal wall. The blood changes were marked and the monkey died in less than 80 hours and from the nodes I recovered the same bacillus. A vaccine was prepared from this bacillus and after the first inoculation the patient's nodes reduced fully 50% in size and in about one month's time he returned to work. However I left town and the vaccine was not given regularly and the patient died about four or five months later on. (*Canadian Med. Assoc. Journ.*, May, 1915).

In the above papers I maintained that the lymphatic nodes are Nature's incubators where organisms multiply and thrive and send out into the blood stream chemical toxins which accumulate and produce the disease, the symptoms depending upon the chemical characteristics of the toxin or toxins derived from the micro-organisms which are situated in the enlarged nodes. In acute infectious diseases the lymphatic nodes are enlarged and are painful on pressure. This enlargement begins shortly after the organism enters the system by way of the tonsil, which I regard as the portal of entry. I have made a diagnosis of incubating measles fully ten days before the rash developed. I have found the nodes to be enlarged in all acute infectious diseases. In the many cases of pellagra which I have examined I have found the nodes enlarged in nearly every instance.

In rheumatoid arthritis many observers have found bacilli, streptococci, etc., in the blood, the joints and in pyorrhea alveolaris. In the Special Rheumatism Number of AMERICAN MEDICINE for June, 1915, is an admirable and full description of rheumatoid arthritis. The articles in this number have been written by the pioneers and most advanced research workers on this subject

but in the medical literature I cannot find any reference to any organism being recovered from the nodes of patients suffering from rheumatoid arthritis. I examined the nodes of patients who suffered from this malady and found them to be enlarged in nearly every instance, the largest being the vertical inguinal nodes of the left side, in many cases as large as a small walnut. In one or two instances however I could not palpate a node in any part of the body.

The following shows the bacteriological findings in twelve cases. I may state here that I have found two organisms, which I am inclined to believe are associated organisms and that both take a part in producing the signs and symptoms of rheumatoid arthritis. I obtained diplococci or small thin bacilli, either alone or combined, in ten cases, the other two cases gave negative results. Altogether I am inclined to think that the diplococcus is the primary organism and that the bacilli play a secondary part. In my next paper, which will appear shortly, I shall give a full description of these two organisms. However I may state here that the diplococcus which I obtained from the nodes of these patients is unique and stands in a class by itself. The primary culture is of very slow growth, taking three days to appear as a delicate sparse growth on the surface of the blood serum. The bacillus grows fairly quickly; it is a short, thin, spore-bearing bacillus.

Case 1.—Patient a little Scotch woman who has suffered from the disease for over 20 years; she was confined to bed when I saw her where she had been for some months, nearly all the joints of the body being involved. The patient suffered greatly and had to be given morphine repeatedly to enable her to get rest. For some years back had been unable to comb her hair or button her skirt; was much emaciated. The nodes were greatly enlarged and I obtained lymph from both the vertical and horizontal

nodes in the groin. I inoculated fully six blood serum tubes and at the end of the third day a sparse growth developed on four of the tubes and diplococci in pure culture were recovered. A vaccine was made and I inoculated the patient with 200,000,000 dead organisms; this was increased gradually to one billion which was given every four or five days. The reaction was marked, slight temperature, increased pain in joints and delirium. After the third day, however, the patient felt better and improvement has been steady until at the present time she does not suffer any ache or pain, walks well, does her own house work, sleeps soundly and is heavier than she has ever been. The nodes gradually reduced in size; in about two or three months' time I inserted a needle into an inguinal node and obtained a mixed culture of diplococci and a thin short bacillus; after six months it was with difficulty that I could palpate the gland, however I obtained lymph and inoculated several tubes and got no growth at all.

Case 2.—Mr. C., a little over 50 years of age. The nodes were much enlarged but here I obtained no growth. When he came under my care his condition was far from being one of comfort; nearly all the joints were involved, he could not feed himself, or shave, or light a match. He came to see me on crutches but with considerable difficulty owing to the swollen and painful condition of the joints of his arms and hands. He was confined to bed for weeks, suffered great pain and could not sleep. I inoculated him with the diplococcus organism obtained from the first case and in a short time he showed much improvement. At present after three or four months' treatment his condition is very satisfactory, he can work his farm and claims that he can run and his grip is good while he now shaves himself with ease and sleeps soundly.

Case 3.—This case is of considerable interest. About one year ago Mrs. J., a stout healthy looking woman, came under my care suffering from acute inflammatory rheumatism. I treated her with sodium salicylate 20 grains, sodium bicarbonate 40 grains every two hours. In spite of this however she developed endocarditis. The condition continued for about five weeks when she left for home. Later the rheumatism recurred and she continued with the treat-

ment. The metacarpo-phalangeal joints, however, remained swollen and painful and the phalangeal joints were in the same condition and no treatment seemed to help her. I decided that I was dealing with a case of rheumatoid arthritis which had become engrafted upon the rheumatic joints. I inoculated her with the diplococcus organism, giving 500,000,000 as a primary dose and in three days the swelling and pain had nearly entirely disappeared. She was given a second dose of 750,000,000 and she left for home feeling quite well. The result was rapid in this case as I was dealing with the early stage of the disease—we cannot expect to get this result in conditions which have lasted for 15 or 20 years as in the foregoing two cases.

Case 4.—Mr. C., aged about 38. Here most of the joints were involved, he suffered a great deal and could not put his coat on by himself or shave and was able to walk only with difficulty. He had lost his position on account of this disability. He was given two inoculations of the short bacillus and four or five of the diplococcus. He is now at work again, feels well, can put on his coat and shaves with ease. I gave him 500,000,000 as a primary dose and increased to 1,500,000,000.

Case 5.—This case is under my care at the present time having suffered from rheumatoid arthritis for over ten years. Most of her joints are involved and a great deal of her time has been spent in the house; she suffers greatly. I gave her two or three doses of the short bacillus without any benefit. She was then given four or five doses of the diplococcus with the result that she is now showing marked improvement, feels better than she has done for six years, can walk down stairs without any help and I expect to have a complete recovery in this case.

Case 6.—This case is one of considerable chronicity lasting over 20 years and the patient has suffered greatly during that time with occasional remissions. She has tried every form of treatment: hot baths at the south, Schaeffer's rheumatic vaccine, and a vaccine made of the colon bacillus, but the disease has gradually progressed; the hands and knee joints are the parts which are most affected. The X-ray picture shows a marked and chronic condition of this

disease. I gave this patient the diplococcus and later tried the short bacillus but improvement has been slow and at the present time I am giving her the diplococcus and bacillus vaccines combined. I cannot claim much for this case but comparing her condition with this time last year she does not now have the intense suffering experienced on wet and damp days which now pass without influencing her condition and I may add that there has been a great improvement in her general state. I obtained from this patient the short bacillus from an enlarged node. We are however encouraged to continue the treatment in this case.

Case 7.—Mrs. P., who has suffered from this disease for over 10 years; both knees, shoulders and elbows are involved. She is over 55 years of age and for years has walked with difficulty and has suffered greatly. After receiving 15 to 20 inoculations she can now walk with ease, without pain, and states that she feels like a new woman. I expect to obtain a complete cure also in this case. I may state that I gave her inoculations of the short bacillus which produced no improvement but the improvement after using the diplococcus was marked, rapid and permanent.

Case 8.—This was one of the severe chronic cases, nearly every joint being involved. There was marked deformity of the hands and feet, the elbows, ankles, knees, hips, and spine were all affected, as also were the thyroid cartilage and laryngeal rings. The patient has not raised her head from the pillow for seven or eight years and rotation of it was impossible. There was a constant accumulation of mucus in the bronchial tubes. She has had five to six injections of the short bacillus and the same of the diplococcus organism and I am pleased to say she can now sit up and has even been out of bed. Most of the joints show a marked improvement and she can rotate her head with ease.

Case 9.—Mrs. D., an old lady of over 70 years of age. She has had inoculations of the diplococcus organism, is now out of bed and shows marked general improvement; she can move her hands and arms much better and without much pain.

Cases 10, 11, 12.—In these I have found the diplococcus and will begin the treatment

in a short time. Two of the cases are in Columbia, South Carolina, one giving the diplococcus, the other the short bacillus. I have to thank Dr. Pope and Dr. J. Watson for referring them to me. I have other cases under observation which I will treat in the near future.

As I have found this identical diplococcus in the urine of patients suffering from rheumatoid arthritis I had a vaccine made from it but cannot claim any results from its use. I believe, however, that at one time or another the urine from rheumatoid arthritis patients will show this diplococcus but I think that by the time that Nature excretes this organism from the kidneys it has become attenuated and will not produce toxins to any extent. In fact it has become practically non-pathogenic.

Most of my good results have been obtained by giving the diplococcus organism. The question arises, why can I not obtain the same results by using the short spore-bearing bacillus? This bacillus produces spores which are most resistant to heat and also to a small percentage of phenol and I am afraid that the amount of phenol used destroys the toxins and thus we cannot look for any results from the use of this bacillus until we can devise some other and safer method of destroying the bacilli without rendering the toxins inert.

Conclusions.—1. In ten out of the twelve cases of rheumatoid arthritis I have recovered organisms from the enlarged nodes, one being a diplococcus and the other a thin short bacillus, either in pure culture or mixed. A vaccine made from the diplococcus produces a cure or a marked improvement in the local and general lesions and symptoms in patients who suffer from rheumatoid arthritis. A vaccine made from the short bacillus improves the general condition and lessens the pain.

2. In the early stage of the disease, that is up to the third or fourth year, before the grave articular changes have taken place in the joints, we can hope for return of the joint function, absence of pain and disappearance of swelling around the joints. In the chronic cases of 15 or 20 years' standing, we get a marked improvement, the pain disappears, the joint function improves and the patient increases in weight and feels well. (Case 1. Mrs. P.) and these encouraging results have been obtained by the use of the diplococcus vaccine.

3. The diplococcus has been found in the urine as well as in the nodes.

4. Cultures obtained from the nodes after four or five months' treatment in severe cases and in much less time in early cases were negative notwithstanding the fact that the diplococcus has been found in the nodes before treatment began.

5. In early cases we can look for results after three to four inoculations; in the chronic cases one may not detect much improvement before two or three months' treatment.

6. In chronic or advanced cases we cannot expect to restore articular cartilages or to produce new joints, however we expect to get an absence of pain, increased motion and lessening of swelling.

7. The initial dose for an adult should be 150,000,000 to 200,000,000, increased rapidly to 300,000,000, 400,000,000, 500,000,000, 750,000,000, 1,000,000,000 to 1,500,000,000. However the dose will depend upon the reaction and general condition of the patient and should be administered every three to four days. It may have to be continued for months. I may state here that I do not look for a reaction in every case and a marked reaction, that is, temperature, pain, is not necessary to produce results.

I think that the results obtained by the use of this diplococcus in rheumatoid arthritis patients warrant me in believing that it is the principal organism which causes this disease, and considering that the disease is progressive and that no known medicinal treatment will give the same results I think that the value of the above treatment is evident.

Since writing the above paper, case 6 shows marked improvement, the progress of the disease has been entirely arrested. This patient, is receiving doses, of from eleven to fifteen billions of the diplococci, with marked reaction.

I have at present, under my care, a delicate young girl, sixteen years of age, who is almost cured. She has been receiving five to six billions diplococci per dose.

After giving patient three or four of these heroic doses, it is well to stop treatment for a week or ten days.

HYSTERICAL ASTASIA ABASIA OCCURRING IN A CASE OF PARESIS.¹

BY

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Hysteria colors and complicates many cases of organic nervous disease, both central and peripheral, but we know little about the laws controlling its appearance. We may safely say that in some diseases, e. g., locomotor ataxia, its occurrence is purely accidental while in others, e. g., brain tumor and multiple sclerosis, either the organic disease

¹The patient was shown at the meeting of the Philadelphia Neurological Society, Jan. 22, 1915.

is itself the exciting cause of hysteric symptoms in a congenitally predisposed person or both the organic and the so-called functional disorders arise from the same exciting cause. In what way organic nervous disease is provocative of an hysteric attack in unknown. It has been claimed by some writers that suggestion is the cause, that given, for example, an organic disturbance of motion it may unconsciously suggest to the patient some other motor (hysteric) affection, or in the same way a true anesthesia from a local peripheral neuritis may lead to an hysteric hemianesthesia. We are however, so much in the dark concerning what hysteria really is that speculation, though interesting, is fruitless. One fact, concerning the relation of organic disease and hysteria is, I think, pretty well established, viz., that the nearer to the cerebral cortex the organic disease is, the more frequent are hysterical manifestations. Thus hysteria is less frequent in peripheral nerve trunk disease than in spinal cord disease and less frequent in affections of the medulla and pons than in affections of the cerebral substance though more frequent than in disease of the cord. The sex element, just as in hysteria occurring alone, does not play as large a part as was formerly thought, i. e., it is almost as often, if not as often, an accompaniment of organic disease in men as in women. As to the symptoms occurring, palsy, ataxia, and anesthesia are especially frequent, convulsions, mutism, or blindness being much more rare.

The case I report is so complex in its symptomatology and the picture so varying that the physicians at first in attendance were in doubt as to whether they had to do with fraud, with true uncomplicated hysteria, or with it plus organic disease, and at the present time, though there is no

room to doubt the existence of organic disease of the cord and brain and also hysterical ataxia I am not absolutely sure as to the exact nature of his organic affection. It may possibly be a pure cerebrospinal syphilis but if so it so nearly resembles paresis as to be indistinguishable. The therapeutic test has made paresis even more certain. Treatment has done no good. In syphilis it, as a rule, for a time at least ameliorates even if it does not remove symptoms.

The patient is a Hungarian man, 34 years old, married, with one child, and has lived in this country eight years. He was first admitted to the Philadelphia General Hospital 10-13-'14. The Social Service department obtained the following history from his wife and employer. He worked in one mill for seven years immediately prior to his illness and was industrious, steady and sober. In March 1912 he was much frightened by the explosion of a boiler in a room where he was working. He was not hurt physically though two other men were killed and several were badly injured. He was afraid to continue to work in the same room and was transferred to another department. In October 1913, he was caught in the belting of some machinery and whirled around. He was greatly frightened but the only physical injury was several broken fingers. He stayed away from work six weeks and in about nine weeks from the time of the accident he began to have "spells." In these, his wife stated, first his fingers would flex strongly, then he would stretch the arms, and fall. During some spells he did not talk, in others he complained of great headache, moaned and groaned. He was never unconscious but often was dazed and "absent" and after one or two hours would get up and act normally. Return to complete consciousness was not sudden. He had about three such spells. He never returned to work after the first spell though they ceased three months before coming to the hospital but about the time they ceased to recur he began to stumble and stagger and lost control of, or at any rate paid no attention to, his bladder and rectum and constantly dirtied himself. On admission his gait was

very unsteady. Both knee jerks were very active but there was no Babinski jerk nor ankle clonus. The plantar, cremasteric and abdominal jerks were normal. He was dull and stupid. The ocular reflexes and the fundi were normal. He did not do well and soon his family removed him. He returned 12-8-'14. I saw him for the first time the next day. On being told to get out of bed, he rolled out and tumbled on the floor but made no real effort to get up though he went through many gyrations. He was filthy i. e. he not only did not control the bladder and rectum but was entirely content to continue dirty and never made any effort to inform the nurse that he needed attention. He was absolutely mute, but evidently heard and understood simple things because he obeyed commands that could be obeyed without using his legs. There was marked ataxia but no palsy of the legs in bed, and no motor disturbance of the arms save tremor on extension. There was marked tremor of the tongue on extension and some days later, when he again began to talk, there was marked tremor of the corners of the mouth and great over-action of all the facial muscles on opening the mouth. The face at rest was wooden in expression. The knee jerks were spastic but there was neither ankle clonus nor a Babinski jerk. He seemed to have analgesia on suggestion in the left arm and leg, i. e. on being told he could not feel pain he gave no sign of being hurt when stuck with a pin on that side though he was very sensitive on the other. After some days he suddenly began to walk of his own accord and ever since his ability to do so has varied from day to day, almost from hour to hour, one time walking well and soon after falling immediately on trying to get out of bed. His mutism has never returned. His speech is very slurring. Mentally he is dull, stupid, childish, demented. His memory is wretched. If asked a question requiring a lengthy answer he begins responsively but after a couple of sentences looks blank and ceases speaking. He can not carry the question long enough in his mind to answer it. Early in January a bed-sore, deep but narrow, appeared on the sacrum and has continued to grow worse. He repeatedly in an aimless sort of way tries to remove the dressing and pick at the sore. When asked why, he denies doing

it and says there is no sore there. Sometimes for several days he controls the bladder and rectum well and then again will be filthy, paying no more attention to himself and suffering no more discomfort than a man in the last stages of paresis. His temper has been good, indeed he has been happy in a silly, irresponsible way, since the first few days in the hospital, though at the beginning he was sullen and inclined to be ugly. His eyegrounds are normal. The blood Wasserman test is positive. Heart, lungs and kidneys are normal.

To sum up, we have a man who presents mentally the symptoms of paresis without delusions of grandeur. He has the over-happiness, irresponsibility, and dementia. Physically he shows the tremor of the tongue and mouth, the slurring speech and the wooden face of paresis. The spastic knee jerks may occur in so many conditions that they are not significant. The bed-sore proves organic cord disease but nothing more. The positive Wasserman test proves he has active syphilis but only creates a strong presumption, does not prove, his symptoms are caused by it. In addition he has a motor disturbance in the legs which cannot be organic (it is not intermittent claudication) but must be either hysterical or pure fraud. A motive for fraud is hard to find. His previous life is against it, and normal men do not change in character at his age. He has, and knows he has, or at least did when his intelligence was better, no claim against anyone so that there is no financial motive for fraud. Further, the mental picture he presents is not the sort of thing we see in malingerers but is a text-book illustration of dementia. The age of onset of his trouble does not help us diagnostically. Though hysteria as a rule begins before the thirty-fourth year this is not always the case and furthermore though we know his medical history since he was

twenty-six years old we know nothing about his adolescence. The symptoms apart from the disturbance of gait and the alternate loss and return of bladder and rectal control (the latter being purely mental and varying with his mental acuity) are beyond a shadow of a doubt caused by organic disease. Hysterical symptoms are not uncommon in the early stages of paresis but they are not frequent as late as they have appeared in this man.

There is one other possibility, indeed a probability, as to the causation of both his organic and functional trouble, namely, that the provocative cause, the direct immediate exciting cause, the match to the powder was the shock of the accidents. The mental shock of trauma is a frequent provocative agent of hysteria and though it is not so frequently seen in paresis, it has been noted often enough for us to be assured of its reality. I have seen three cases of paresis in which there was trustworthy testimony that the sufferers had shown no symptoms to intelligent laymen until a short time after having been through railroad or trolley accidents in which there was a great element of shock. None of these men had been seriously hurt in the accidents and none suffered the slightest injuries to the head. In all there were physical signs which proved that the morbid process in the brain and cord must have antedated the shock. In other words though their friends had noticed nothing wrong with them, medical examination would have shown the physical signs of a beginning paresis.

The final diagnosis is, therefore, hysterical ataxia due to mental shock occurring in the course of paresis the result, as is most frequently if not invariably the case, of syphilis.

THE USE OF MINERAL WATER (RADIOACTIVE) IN GASTRITIS.¹

BY

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After a previous study of the radiological qualities of Mountain Valley water contained in sealed bottles (E. Zeublin, *Interstate Medical Journal*) it seemed of interest to examine the effects of this water upon the gastric secretion. This seemed justified, since a personal observation suggested that the use of this water must have some influence upon the secretory functions of the stomach.

Our understanding of the action of mineral waters upon the digestive functions, though claimed empirically, lacks confirmation by clinical and laboratory methods. For our therapeutic aims it is essential to know what we can expect from such a medication. The following cases, in addition to my personal observation, were selected from the Dispensary and Hospital material.

Case 1. Personal observation upon myself.

In taking 2 glasses of Mountain Valley water in fasting condition, I experienced a rapid appearance of hunger which was followed by a sensation of pressure in the epigastric region and later followed by a burning sensation in the epigastrium and esophagus.

The next day, early in the morning before breakfast, I took the ordinary test breakfast consisting of 2 rolls and 2 glasses of ordinary tap water; three-quarters of an

¹ The water was furnished through the courtesy of the Mountain Valley agency at Baltimore, to whom I wish to express my appreciation.

² Paper presented at the Baltimore City Medical Society, March 6th, 1915.

hour afterwards the stomach content was withdrawn, and in the grayish slightly cloudy fluid the acidity ascertained was as follows:

Free HCl acid	20%
Combined HCl acid	6%
Total acidity	26%

The next morning the ordinary tap water was substituted by the same amount of Mountain Valley water with the addition of 2 rolls. Three-quarters of an hour later the stomach content was withdrawn and the following acidity found:

Free HCl acid	36%
Combined HCl acid	8%
Total acidity	48%

During the digestion of the Mountain Valley water the same observations were noted as indicated above. Difference in the output of free HCl acid with Mountain Valley water 80%, difference in total acidity 84.5%.

Case 2. Starting from this personal observation, a convalescent typhoid patient (F. C. No. 1816) was treated on Aug. 7th by an ordinary test breakfast. No free HCl acid was obtained, total acidity amounted to 20% and lactic acid was present in small amounts. The patient was given 1 glass of Mountain Valley water half an hour before each meal 3 times a day, and on Aug. 11th the stomach test was made giving the following result:

Free HCl acid	20%
Total acidity	40%

In this instance we have a considerable difference in the output of the free as well as of the total acidity.

Case 3. J. A. M., 38 years old, baker. G 17. Admitted Nov. 5, 1913. Married. Father died at age of 76 (suicide), mother died of old age. No brothers. One sister living and in good health. One child in good health.

Negative as to tuberculosis, malignancy, rheumatism, mental or nervous diseases.

Past history.—No infectious diseases except typhoid fever in 1900, sick for 13 weeks. In 1894 malaria, chills for 2 months. In 1911 rheumatism with involvement of ankles, knees, elbows and fingers, the effect of which has not yet entirely disappeared. Patient is inclined to catch cold during the winter, complaining at that time

of hacking cough, heavy mucoid expectoration in the morning, occasionally slightly hemorrhagic during the past 3-4 years. Venereal-neisser infection in 1894 with a second manifestation in 1899. First attack lasted 2 months, the last one month. No lues admitted.

Habits.—Drinks tea 3 times a day, beer in moderation, no whiskey.

Present illness.—For the last 6 months patient is subject to malaise, aching of limbs and joints and to severe frontal headache. Six weeks previous to his admission, following an oyster dinner, patient had an attack of acute indigestion; gas and flatulence observed almost all the time. Pains after eating particularly in the epigastrium and when in upright position or after a heavy meal. No vomiting. Appetite good.

Respiratory tract.—For the past 10 years complained of bad hacking cough, expectoration as mentioned above, also slight hemorrhagic sputum for the last 3-4 years. Loss in weight 6-8 pounds during last 4 months. No night-sweats.

Cardiac vascular.—Shortness of breath on exertion, palpitation of heart, no precordial pain, no edema of ankles.

G. U.—Amount of urine not increased, no burning pains at micturition, no discharge, no micturition at night.

Joints.—Dull pains in elbows, fingers and knees.

Nervous system.—Sleep good, severe frontal headache almost constantly present.

Eyes.—Sight impaired.

Status.—Middle aged, well developed individual, coughs considerably during examination.

Eyes.—Left pupil larger than right with slow reaction to light and accommodation.

Mouth.—Pyorrhea, congestion of pharynx, no tremor of tongue.

Chest.—Poor expansion over both apices, percussion negative over both apices in front and back, a few crepitant rales, harsh expiration particularly noted over right apex in front, a few moist and crepitant rales over right basis in back.

Heart.—Apex beat slightly outside of mammary line in 5th interspace, percussion shows moderate enlargement of relative cardiac dullness to the right; heart sounds over mitral and tricuspid area indistinct particularly first sound. All sounds over pulmonic and aortic area indistinct.

Spleen and liver not enlarged.

Abdomen.—Tenderness in midline in the epigastric region between ensiform cartilage and umbilicus. Negative for rest of abdominal examination.

Inguinal glands enlarged.

Extremities.—Moderate tenderness of right knee without swelling, reflexes are normal.

Pulse 78, of good volume and tension, respiration 28 per minute. Temperature 97 $\frac{3}{5}$.

Blood pressure.—Systolic 110, diastolic 95 (Nov. 7, '13). Nov. 11th, systolic 115, diastolic 100. Hgl. 85%, 9667 white blood cells with 77% polymorphonuclear, small mononuclear 16%, large mononuclear 4%, eosinophile 1%, basophile 2%. Wassermann test, positive. Luetin, negative.

Urine examination.—Specific gravity 1017, sugar and albumen negative; many amorphous phosphates; total amount per 24 hours 622 cc., specific gravity 1011; acid reaction: urea 0.0018, sediment none.

Sputum.—Small amount, many leucocytes, but negative as to tubercle bacilli.

Stomach examination Nov. 8th after test breakfast. White acid contents, total acidity 4%, free HCl, yeast cells present, blood, lactic acid negative. Patient received 1 glass of Mountain Valley water $\frac{1}{2}$ hour before meals 3 times a day. The subsequent stomach acidity showed a total acidity of 24%, and free HCl 12%. Patient received besides gray ointment, magnesium sulphate; his stomach and digestive condition seemed to improve subjectively and objectively. The headaches did not improve notwithstanding the occasional medication of acetanilid 5 gr. and codein $\frac{1}{4}$ gr. Patient when leaving hospital was advised to return for salvarsan treatment.

For the following cases, Nos. 4, 5 and 6, I wish to thank Dr. Albert H. Carroll for his valuable cooperation in observing these dispensary cases with disordered chronic gastric secretion. These cases apparently did not suffer from a temporary or transient derangement of the secretion of the gastric bag, nor were they secondary to some remote pathological condition which was evidencing itself by an altered secretion of the gastric ferments.

Case 4. Disp. No. 52946. M. P. Age 56. Female. White.

This patient had been under treatment several years ago for achylia gastrica. At that time and when she came to us recently, there was found to be almost a complete absence of gastric secretion. There was present, however, a mucous anacid gastritis. The HCl deficit after a double test meal varied from 30-35 degrees.

After 10 days treatment, with no other therapeutic agent except the radioactive water, HCl was present in small amount. On the 17th day the free HCl was 25° (Aug. 1st). Aug. 11th free HCl=30 degrees. Several meals were drawn later, and although in the intervening period she had indulged in a diet of fried and fatty foods, cabbage boiled with ham (this meal or content was drawn unexpectedly) there was found present free HCl 25 degrees. Case discharged as cured.

Case 5. Disp. No. 55086. J. B. Male. White.

This case also exhibited an anacid gastritis with a deficit of HCl, 20 degrees. Much mucus. Lactic acid present, no blood or bile. Practically undigested food found after three and one-half hours. Two later meals before the treatment began were also deficient in HCl.

Although I have every reason to believe that the patient was honest in the taking of the water for a period of over three weeks, at no time was there evidence in the test meals of an increased output of the ferments or of HCl.

Case 6. This case was also one of diminished secretion, only a trace of free HCl being found in the meals. After several weeks treatment, in which two later meals were also free from uncombined HCl, he disappeared from the clinic.

Case 7. C. P. K. 18. Thirty-six years old, single, housework, lives at Hyattsville, Md.

Patient in coming to the hospital complained of gnawing pains in the middle of the sternum and in the epigastrium; she had considerably lost in weight during the last few years. Heredity of parental history negative so far as patient remembers. No brothers nor sisters. Parents dead, cause unknown.

Previous diseases.—In 1887 had measles, 1890 whooping cough, 1909 pleurisy with pneumonia; patient is subject to tonsillitis. No previous infectious diseases except those mentioned. Present illness started in 1910 with indigestion, which gradually became worse, attended by vomiting of dark masses. In 1913, beginning of Sept., these manifestations became more accentuated, the pain, gnawing in character, was increased by the intake of food and was always located behind the sternum. Vomiting was followed by relief and it occurred at every opportunity. The vomitus was of brown yellowish color, very bitter taste, of foul odor and contained gas (odor of old iron). Appetite poor, patient belches considerably. Intake of food considerably reduced, restricted to soft boiled eggs, coffee and tea.

Pulmonary manifestations negative with the exception of dyspnea on exertion and slight cough. Circulatory manifestations: occasional dizziness and buzzing of ears and flashes before eyes. No edema.

Genito-urinary.—Has to get up 3-4 times during night passing medium amount of water. Headache occasionally noticed, but not of severe character.

Habits.—Drinks 1 cup of coffee, tea occasionally.

Menstrual history began at age of 12 years with regular periods of normal duration; occasionally some clotting and pains in lower abdomen observed. Climacterium manifest since 1910.

Physical examination.—Patient is emaciated, skin loose, inelastic, leaving many folds, mucous membrane (conjunctiva, lips) very anemic, also skin pale and yellowish. Cardiac respiratory system normal; digestive tract as follows: Tongue furred, white color, teeth ground down and in poor state of preservation. Abdominal findings: negative with regard to percussion and palpation; liver, kidneys, spleen not palpable. Genital organs normal. Extremities nothing particular, reflexes normal, vessels soft elastic wall, pulse equal, regular, arterial tension low.

Laboratory findings.—Urine, 10/14, cloudy, amber, acid, specific gravity 1020; sugar negative; albumen med. ring, sediment, urates, few blood cells and leucocytes. 10/16, total amount (24 hrs.) 16 oz. specific gravity 1030, color red brown, urea

0.0017; negative as to sugar, albumen and microscopical findings.

Blood.—10/17-Hgbl. 80%, red blood cells 3,800,000, white blood cells 7,600, polymorphonuclear 76%, small monocytes 19%, large monocytes 4% and basophiles 1%. After a violent hematemesis the Hgbl. on the 10/21 amounted to 25% followed by a slight increase to 40% on the 24th. On the 11/1 30% with 1,860,000 red blood cells, on the 12th 25%, 1,960,000, on the 19th 25%, 2,236,000.

Abderhalden Ferment Reaction with carcinomatous tissue on the 11/26 markedly positive, also slight reaction obtained with liver.

Blood pressure on the 10/24, systolic 90, diastolic 65; on the 10/18 introduction of duodenal tube and feeding with egg albumen, peptonized milk, sweet oil and water as desired. Patient had a violent vomiting of blood, so the feeding had to be discontinued. Duodenal tube when first inserted did not pass below the pyloric end. Gastric content withdrawn through the duodenal tube 2½ hours after injection of medium boiled egg and toast consisted of 150 cc. of a brownish, discolored fluid, benzidine and guagac reaction strongly positive. Microscopic examination showed a few red blood cells, many epithelial cells and starch granules. Stomach test on the 17th, absence of free HCl acid, total acid 20, lactic acid and occult blood present. The stools on the 19th were of a tarry color, later on brown color, putrid odor and semi-solid. Bucket test left for 12 hours, when withdrawn, showed a marked blood discoloration of the string corresponding to the left of the pyloric end with marked positive reaction for occult blood.

X-ray examination.—Stomach in normal position, 1 hour later pylorus deformed, shows retention of bismuth, also pylorus of irregular outlines.

On the 21st the tube feedings were substituted by a soft diet, patient was given tincture of opii 10 min. and diluted HCl. On the 11/15 edema of ankles was noticed and patient was put to bed. On the 11/25 Mountain Valley water, 6 oz., were given 3 times a day ½ hour before meals and continued. For about 4 weeks this medication was kept up, a string test made, which, when withdrawn did not show any trace of

blood. On the subsequent test, or 3 weeks later, the same negative finding was obtained. Patient generally improved, felt strong, had no more vomiting, no pains, and had gained somewhat in flesh and color. After having left the hospital no more information of the patient could be obtained.

In this case we are under the impression that the patient improved to a greater extent than anticipated, particularly the absence of blood on a string test was astonishing. Whether this effect must be attributed to the better feeding and better hygienic conditions remains doubtful, also whether the Mountain Valley water had any special healing tendency upon the ulcerated surface of the pylorus remains undecided. Further observation could only decide about the final outcome of this case, also whether malignancy was present or a chronic gastric ulcer, the clinical facts, however, speak in favor of the first possibility.

In six cases where the gastric secretion was tested, we observe in three instances a return in the secretion of free HCl acid (cases 2, 3, 4), in one instance an increase in the output of free HCl acid. In three instances we also see a higher amount in the total acidity.

In two dispensary cases (5 and 6) practically no evidence could be found of an improvement of the gastric secretion; whether these were cases particularly stubborn to treatment, or whether the patient did not use the Mountain Valley water regularly as in the other cases that could be controlled, this question cannot be decided.

Case 4 is particularly interesting showing the possibility that in achylia observed for several years, the use of mineral water can restore a normal gastric secretion.

In case 7 with a preceding history of hematemesis, we did not feel encouraged to submit the patient to the irritating effect of the stomach tube. This case seems interesting so far, that the patient's general condition and gastric digestion seemed to improve under the use of the water.

No explanation can be given why in two cases no improvement in the gastric secretion could be noticed. The question also remains undecided whether the small amount of emanation found in bottled Mountain Valley water is responsible for the improved secretion in cases 1, 2, 3

and 4. From the literature we remember the stimulating influence of small doses of Radium Emanation upon the action of pepsin (referred to in E. Zueblin, *Maryland Medical Journal*, 1914, LVII, p. 119). Besides we must not forget that the mineral ingredients of the water may by mechanical and chemical action, by the removal of mucus from the inflamed mucosa favor better conditions. Glenard's and other interesting discoveries of the catalytic and colloidal action of Vichy and other waters probably refers to qualities of solutions closely related to the still mysterious laws governing colloidal chemistry. Instead of a scientific nihilism we better keep our mind accessible to a large horizon of medical understanding in the future.

As a conclusion from these few observations it seems that radioactive water may favorably influence the gastric secretion in cases of diminished or absent free HCl acid. The use of radioactive water seems to be contraindicated in cases of hyper secretion, hyperchlorhydria and allied conditions.

MIGRAINE: ITS CAUSE AND CURE.¹

BY

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An article on migraine appeared in the September number of a widely read medical monthly magazine. It was noteworthy not because it brought anything new on the well-worn subject, but by its absolute "conservatism."

After nearly a generation has passed, since it was proved that migraine is caused by eyestrain and can be cured by glasses, the author of the article preferred the novel theory, that faulty secretions of some yet to be determined glands are the real causes of the disease. Editorial quasi-sanction was given to the secretion-theory of migraine.

¹ Read before the Maimonides Medical Society.

All this goes to show, that no matter how long a new theory has been demonstrated a true one, no matter in how many articles the truth reiterated and regardless of the number of case-reports have substantiated the soundness and correctness of a medical discovery, it remains still "new," still "unproved" and still in need of additional proofs so long as the great mass of the medical profession continues to ignore the truth of it.

Migraine or hemicrania is the misnomer for the functional disease, characterized by periodic headaches, usually followed by nausea or vomiting, and ending in partial or complete relief. The periods vary in different patients; the attacks may return almost daily, perhaps even once or twice a year. They may last half an hour or a week and their intensity may vary as their periods and durations. The accompanying symptoms are characterized by lack of character and uniformity.

I shall therefore take the easiest and most practical method of bringing home my point by reporting a few characteristic cases of migraine, all of them positively cured by accurate correction of the ametropia.

Case 1.—Mrs. A. D., aged 51, consulted me in July, 1905. For over twenty years she suffered from monthly-recurring violent headaches, lasting a whole week and accompanied by intense misery and nausea.

She was wearing

R. E. Sphere + 1,25 for distance, + 3,50 for reading.

L. E. Sphere + 1,50 for distance, + 3,75 for reading.

What she really needed and what I ordered was:

R. E. Sphere + 1,50 with cylinder + 0,50 axis 90°.

L. E. Sphere + 1,50 with cylinder + 0,37 axis 70°.

For reading I added to both distance-glasses + 2,50 spheres. Her migraine at-

tacks returned two or three times, but with diminishing intensity. Since December, 1905, she has not had a single attack.

Case 2.—Miss C. B., aged 15, was referred to me in December, 1912. She had headaches, recurring every few weeks and gradually increasing in strength until she would scream and finally fall in a faint. After regaining consciousness she was ill for a day or two, followed by perfect well-being until the next attack.

She was wearing, both eyes, S. + 1,75 with C. + 1,50 axis 90°.

What she needed was:

R. E. S. + 2,25 with C. + 1,75 axis 45°.

L. E. S. + 1,75 with C. + 1,75 axis 105°.

So long as the girl wore these glasses she had no attacks, but so soon as she recovered, she would discard her glasses, and invariably another attack followed.

Case 3.—Mrs. D. B., aged 52, saw me in November, 1914. Migraine attacks had recurred every two or three months, accompanied by dizziness and stomach symptoms. She accepted:

R. E. C. + 0,25 axis 45°.

L. E. C. — 0,25 axis 180°.

For reading I added + 1,50 to the lenses.

Her attacks never recurred and her vertigo and stomach troubles disappeared as if by magic.

Case 4.—Mr. L. S., aged 41, was referred to me in November, 1914. His occupation was driving. According to the patient's report his attacks began nine years ago. Every four or five months he would have headaches and with such violent dizziness as to send him to bed. The attacks would last a day or a day and a half. He also suffered from pain in the abdomen, indigestion, and constipation. The attacks recurred more and more frequently, until at the time of his visit they came on every three or four weeks. Nine years ago a physician advised him to consult an oculist about his eyes, but as he had good distant vision he concluded that the physician was ridiculously wrong in his diagnosis, and he went to another physician, who promptly began to treat his stomach and kept it up for five years. In the meanwhile a surgeon confirmed the diagnosis of "*Ulcus ventriculi*" as correct and operated on him for the "ulcer." Of course when the abdomen

was opened there was no ulcer, but there was, to be sure, an appendix, so this was removed. The pain in the right side of the abdomen naturally disappeared, but new pain in the left side made its appearance, all the other symptoms remaining the same. Finally a friend told him that he had had the same symptoms and that a pair of glasses had cured him, so he came to me for glasses. I prescribed:

R. E. S. + 0,75 with C. + 0,50 axis 180°.

L. E. S. + 0,50 with C. + 0,75 axis 165°.

For reading he accepted an additional S. + 1,0 right, and S. + 0,75 left.

The patient not only recovered from his migraine, but also lost his constipation, his indigestion, and his abdominal pain.

Case 5.—Mrs. M. S., aged 32, consulted me in February, 1915. She began to suffer at the age of 13. She used to waken several times a week at about 4 o'clock in the morning with violent headaches, retching, vomiting and cardiac palpitation. The attacks lasted a day. At a "show" she got dizzy and fainted. Her digestion was poor for years. She accepted:

R. E. S. + 0,75 with C. + 0,50 axis 105°.

L. E. S. + 0,50 with C. + 1,00 axis 90°.

As she also suffered from premature presbyopia I gave for reading an additional + 0,75 sphere.

The patient recovered. She has no more attacks; she has restful and uninterrupted sleep, and her digestion is excellent.

Case 6.—Mrs. G. B., aged 33, saw me in March, 1915. She began to suffer in her early childhood, but only at rare intervals. Nine years ago the attacks recurred every two months, slowly increasing in frequency, until they returned every two weeks. They began with a throbbing pain in the right supraorbital region, spreading to the occiput and back of neck, ending in "a fierce pushing, splitting headache." During the attacks she sat upright, her head bent to the right and forward, her eyes and mouth half open, the saliva dribbling from her mouth, and tears flowing from her eyes. After 30 or 45 minutes the pain ceased and the patient fell back utterly exhausted. In an hour or more the attack would recur, and thus it went on for a day and a half. The patient was otherwise healthy, though irritable. She naturally consulted a number

of physicians, who tried various remedies in their vain efforts to cure her. One physician was quite positive that a gynecological operation was demanded, but quickly changed his mind, when told that her father also suffered from the same disease. A misleading factor in this case was her excellent vision and her ability to read with comfort. She accepted:

R. E. S. — 0,12 with C. + 0,25 axis 105°.

L. E. S. + 0,25 with C. + 0,25 axis 165°.

For reading I added S. + 1,0 to both lenses.

The attacks continued to recur, but with decreasing intensity and at longer intervals. She is now entirely free of her lifelong martyrdom.

Case 7.—Mrs. A. M., aged 25, had headaches with nausea once every week for many years, but being pregnant she gave up reading during the last three months of her pregnancy and the three months following the delivery. During that time she had no headaches whatsoever. With the resumption of reading her headaches returned. She had glasses, but used them only for reading. Her oculist also told her that for all practical purposes her left eye was blind. She accepted:

R. E. S. + 0,75 with C. + 2,25 axis 100°
= 20/16.

L. E. S. + 4,00 with C. + 2,00 axis 100°
= 20/20 + 1!

Her migraine disappeared and also the backache of years.

Case 8.—Mr. I. B., 19 years old, plumber, was referred to me in April, 1915. This patient's sufferings began in early childhood, at four, when he began having attacks twice a year; later he had them twice a year and now they recurred every third week. They began with a so-called "blind spell," that is, he could not see clear, everything seeming to be in a haze. When the "blind spell" had lasted thirty minutes he began to feel pain in both eyes and in the right supraorbital region with nausea and intense retching, but no vomiting. During the attack, which lasted from five to eight hours, the whole right side of his body became partly paralyzed, the tongue so unmanageable that he could not make himself understood, the "teeth on the right side" were benumbed, the right hand very heavy and the right leg

stiff. The paralysis left with the headache. With exception of the three days following the attacks he was perfectly healthy and happy.

About three times a week he had nightmare.

On account of the nausea and retching he was sent to a surgeon (the same who operated on case 6). The surgeon made a diagnosis of gastric ulcer, but he must have had some doubts about the correctness of this diagnosis, as he had him X-rayed seven times before he decided to operate. He found no ulcer, and the patient could not enlighten me about the fate of his appendix. As the patient persisted in having the attacks he was X-rayed twice more and told never to come back, as he was a nuisance and an ungrateful patient.

I ordered:

R. E. S. + 1,0 with C. + 0,50 axis 15°.
L. E. S. + 1,0 with C. + 0,75 axis 165°.

After one or two slight attacks these seizures disappeared altogether. He was also rid of the nightmares.

Conclusions.

1. The most constant symptom of migraine is headache, with or without nausea or vomiting.
2. The characteristic symptom of migraine is periodicity.
3. The only known cause is eyestrain.
4. The sole cure of migraine is correct glasses.
5. Good distant vision and ability to read with "comfort" does *not* exclude eyestrain.
6. In many of the worst cases weak lenses only are required, but these must be of the most right kinds.
7. The ages of the patients ran from 4 to 52 years.
8. The seriousness and frequency of the attacks increase with age.
9. Failure of glasses to cure migraine is almost certain to be due to faulty refraction work.

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REMARKS ON THE ANATOMICAL AND PHYSIOLOGICAL BASIS OF AN ABDOMINAL SUPPORT OR CORSET FOR WOMEN.

BY

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In order to intelligently understand the mechanism of abdominal support in women, one must first resort to the anatomy and physiology of that part. As the anterior abdominal muscles are such powerful agents in acts such as defecation, micturition, parturition, vomiting, and labored expiration, a few words regarding the anatomy of the more important ones may not be amiss.

The rectus abdominis muscle may rightly be called the anchorage muscle. It is broad and strap-like and arises from the symphysis and crest of the pubis. Expanding as it passes upward, the muscle is inserted to the fifth, sixth and seventh costal cartilages. The important lateral muscles comprise the obliquus externus and obliquus internus. The obliquus externus abdominis is a broad thin sheet of muscle with an origin from the outer surfaces of the lower eight ribs, and by slips which interdigitate with the important muscles of the back. The muscular fibers radiate downward and forward, and anteriorly are inserted into an extensive triangular aponeurosis covering the anterior abdominal wall. This aponeurosis gains attachment above to the ensiform cartilage, below to the symphysis pubis and by its intermediate fibers to the linea alba or middle line. Poupart's ligament represents the lower limit of the aponeurosis of the obliquus externus and extends from the anterior superior iliac spine to the spine of the pubis. The obliquus internus abdom-

inis is also a broad thin sheet lying beneath the obliquus externus. It arises from the lumbar fascia, iliac crest, Poupart's ligament, and is inserted into the four lower ribs, linea alba, and pubic crest. Its fibers also run in an oblique direction.

The various functions of the abdominal muscles are: *First*, to retain the intestines in their physiological position. *Second*, to narrow the abdominal cavity in various directions. *Third*, to assist in the evacuation of the intestine by the pressure they exercise, as for instance in parturition, defecation, urination and in vomiting. *Fourth*, they regulate the innervation and circulation of the abdomen, not only the motility of secretions and fluids in the vessels and intestines, but also in the tissues. If the abdominal muscles relax, if there is enteroptosis, there will occur disturbances of circulation and secretion in the abdomen. There is no enteroptosis without relaxation of the abdominal muscles.

When these muscles are unable to carry out their function, think of the many abnormal changes that may occur within the abdominal cavity, not to speak of the many reflex disturbances elsewhere. One of the main causes of chronic constipation in women is due to faulty action of the abdominal muscles. Their action during parturition is too well understood to be discussed in this article.

I think we must agree that the abdominal wall plays a more important function in the female sex than in the male, and a weakening of its muscles will therefore cause more serious results. It is an undisputed fact that the abdominal muscles in women are weaker, do not develop as readily, and cannot stand the strain to the same extent as that of the male. It is characteristic of the sex, and we say the cause is

hereditary. Even in the earliest periods of history, we have evidence that women wore some sort of abdominal support. They still require it, and in my mind always will.

The question now arises, how can the abdominal wall be best supported? For the answer we must look to the anatomy and physiology of that part. Devise a corset corresponding to the structure and function of the abdominal muscles and we have attained a point as near perfect as possible. In short, construct a corset on a strict anatomical and physiological base. Many attempts have been made to construct such a corset, but the great difficulties encountered were to make them comfortable to the wearer, and to prevent shifting.

The principal feature of a scientific corset is what may be termed a cast of the recti and oblique abdominal muscles. The imitation should be so perfect that even Poupart's ligament is included. Just as the oblique muscles interdigitate with the important muscles of the back, so in like manner should the rear of the corset anchor or fix the front portion. When properly adjusted, the lower border should attach itself to the crest of the pubis and then run obliquely upward and outward, following the course of Poupart's ligament.

Every good corset thus far constructed gathered its real hold on the space between iliac crest and trochanter; and gave support by direct pressure over the lower abdominal zone. We know, however, that the abdominal muscles give support by a lifting action, and only secondarily by pressure. The direction of the fibers of the oblique muscles fully demonstrates this. In a similar manner the scientific corset gives support primarily by assisting the oblique muscles in their action, viz.: a lifting support, and only secondarily by pressure. We may go

a step further. Muscles contract and relax. A good example is when a woman after standing, sits—her recti abdominal muscles relax. In the scientific corset, that part of the corset corresponding to the recti muscles should relax or bend outward when sitting, imitating exactly the normal function.

I have observed on the living model that the part of the corset lying over the lower abdominal wall, should follow every movement of the muscles. By means of its elasticity it should contract and relax in unison with them; in short it should actually assist them in their function, as well as giving support. This support is over the lower half of the abdominal zone, the upper being absolutely free from pressure. The ordinary corset at its best only assists by compression, which is certainly a poor imitation of nature's support.

PSYCHOANALYSIS DE-SEXUALISED.

BY

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The recent publication of Jung's book, "The Theory of Psychoanalysis" (Nervous and Mental Disease Publishing Co., N. Y., 1915) offers a favorable opportunity for the consideration of the essential differences between Jung's and Freud's theories. For several years Jung was one of the staunchest adherents to, and champions of, Professor Freud's epoch-making, brilliant and wonder-working teachings; but recently he has been gradually breaking away from these teachings and has sought to set up new ones in their place; but his writings were always so vague, so obscurely expressed and so disconnectedly, that it was practically

impossible to pin him down to anything definite. A large number of physicians and amateur psychologists have again and again asked me for a brief and categorical resumé of the differences between the Jungian and Freudian "schools." This paper is intended to comply with this request.

There can be very little question that Freud would have no difficulty in the court of public opinion in vindicating his right to restricting the term "psychoanalysis" to his theories and technique, and in convicting Jung of an infringement. The title of Jung's book is misleading in at least two important respects: it is not an exposition of the psychoanalytic theory of Freud, although the title implies that it is; secondly, the book does not deal with psychoanalysis at all, but with Jungism, i. e., Jung's departures from and alterations of Freudism. These latest modifications of the psychoanalytic theory are so sweeping and so far-reaching that the end-product bears almost no resemblance to the original. There is as little likeness between Jungism and Freudism, notwithstanding Jung's protestations to the contrary, as there is between astrology and astronomy, alchemy and chemistry, or graphology and graphiography. Freud's theories are the results of careful scientific empiricism; Jung's of speculative mysticism. One is wholly experimental; the other wholly conjectural.

Jung gives first rank to *the actual or present conflict* as the causative factor in the outbreak of a neurosis. According to him the individual goes to pieces because he is unable to cope with some situation in his life or to adapt himself to it; as a result of this *non-adaptation* there is a *regression of the libido* and a development of neurotic symptoms. This was very nearly the view of Freud and Brewer some thirty years ago

when the treatment consisted in directing the patient's attention to the traumatic situation in which the symptoms originated and in ferreting out the *psychic conflict* and giving vent to the pent-up emotions. It was this that led to the discovery of the psychic mechanism which they called "regression." But after years of patient investigation Freud found that many of the symptoms—the most distressing ones usually—could not be cleared up and done away with unless the analysis went back to experiences, not necessarily pathogenic, in infancy. Every competent psychoanalyst ultimately reaches the same conclusion and finds that the determination not to go beyond the actual conflict terminates in a failure to cure his patient. The significance of the actual difficulties confronting the patient at the onset of the neurosis Freud expressed in the words "*the secondary benefit of the neurosis*," by which he meant that the patient takes advantage of his neurosis to shirk tasks unpleasant to him and to avoid the solution of difficult problems. The neurosis is an escape from duty, by means of which the patient not only escapes censure and self-reproach but secures for himself the sympathy of those on whom he imposes. *Jung makes that primary which to Freud is secondary.*

To account for the striking fact that some persons develop a neurosis under circumstances which do not affect others, Freud postulates a peculiarity in the *psychosexual constitution* as an essential predisposing factor, and he frankly admits that as yet we know very little definitely about this. Jung, determined at all costs to eliminate everything that smacks of sexuality from his system, substitutes for this conception an "*innate sensitiveness*" which he cannot explain and which he is forced to admit

may be only a secondary result (which it undoubtedly is) of the individual's peculiar psychic experiences. The indefiniteness and arbitrariness of this conception—as well as the trick of appropriating Freud's conceptions and disguising them under *new names*—is characteristic of the whole of Jung's work. It is so much easier to rename than to discover! All great discoverers have had the same experience. Envious imitators seek to attract to themselves the credit due to the master by introducing into his teachings minor details (which they seek to raise to first importance), by altering names, by criticising some slight discrepancies, by theorising about the new doctrines, etc., etc. All this is especially true if the new happens to be out of harmony with the prejudices and superstitions of the masses. Note Darwin's experiences!

After years of patient and painstaking observation of neurotics Freud found that in all psychoneurotics the ultimate roots of the symptoms lie in certain activities of childhood and infancy which cannot be considered anything but sexual. He was able to convince himself and others who were not blinded by prejudice (i. e. foregone conclusions) that young children, even babies at the breast, are not only not asexual, as has been hitherto generally believed, but that they have such a rich and varied sexual life that they may be considered polymorph-perverse. This conception, so opposed to the current notion of the purity and innocence of our childhood, has brought all sorts of abuse and vilification on the heads of Freud and his disciples. Jung, evidently unable to bear his share of this abuse, and finding here a loophole for escape from the fold of the Freudian school and an opportunity for founding a school of his own—

some men cannot follow what other men begin—*rejects the infantile sexual*. It is really pitiful to see how he flounders about and wallows hopelessly in the maze he has himself created in the attempt to overthrow Freud's absolutely incontrovertible conclusion. There is no getting away from Freud's facts. *The sexuality of childhood is a fact*. In a thoroughly arbitrary and illogical manner, without adducing a single fact in corroboration of his thesis, Jung asserts that the manifold sexual activities of young children are not sexual,—that they are *presexual*!—and then proceeds to explain the life of the child in accordance with a preconceived theory as to the nature of the sexual instinct which will not bear scientific analysis or investigation.

According to Jung the symptoms of a neurosis are the "exaggerated and correspondingly disturbed functional manifestations overflowing with libido;" whereas according to Freud they are the disguised (unconscious) sexual activities of the patients and are the result of some interference with their normal sexual life. Jung has only disguised Freud's thought. Psychoanalyses conducted in a genuinely scientific manner, unhindered by preconceived theories, will continue to confirm Freud's empirical deduction. According to Freud *the symptoms are a compromise between the individual's repugnant erotic impulses and his "higher" (i. e. ideal, cultural) individuality*; whereas according to Jung the conflict is one between the individual's "duties" and his "*psychic indolence*." In place of the conception of the neurotic's "*sense of guilt*" Jung substitutes the *reproach for not meeting the tasks of life adequately*. With this sort of jugglery with Freud's terms and concepts Jung seeks to create, as Freud says,

a wholly new religio-ethic system—with the object of undoing all of Freud's work.

Freud's analytic work during many years convinced him that the nuclear or "*root complex*" in all the psychoneuroses is the *Oedipus (or Electra) complex*, that is, that at the bottom of every neurotic's ailment is an unconscious and repressed attachment to the parent of the opposite sex and, not infrequently, a hostility to the parent of the same sex. Jung, quite characteristically, retains the term "*Oedipus complex*" but, to escape the censure of the prudes, gives it a symbolic interpretation. According to him the mother represents the unattainable that man had to give up in the interests of culture and the father typifies the inner father (!) from whom the individual must free himself to attain his independence. In the interests of this interpretation of the neurotic's conflict, Jung excoriates Freud's use of the word "*libido*" as having a sexual signification, and substitutes for it the same word as meaning the *life principle* itself. According to Jung everything we do, even eating, is a manifestation of the libido; whereas Freudians restrict the term libido to the sensuous (not "sensual"!) element in our life.

For the perfectly unambiguous and easily demonstrable "*castration complex*," the child's fear of being deprived of his genitals as a punishment for masturbation, Jung substitutes a wholly theoretical fantasy of *self-sacrifice*, the sacrifice of infantile wishes after puberty,—a sacrifice that he calls "the central symbol of Christianity." The introduction of current theological terms and concepts into any pseudo-scientific theory is almost certain to attract a large following.

Without a fairly thorough knowledge of the early history of the neurotic individual and the behavior of his libido a cure is in

most cases impossible. This involves a careful examination of each neurotic's sexual life history, even that of his infancy and childhood. Jung, realizing that it is this digging up of the patient's past sexual life that arouses the antagonism of the prudes and sexual hypocrites, says that as a matter of fact this procedure is wholly unnecessary, and he attempts to cure his patients by what he calls a "*re-education*," a concentration of their attention on the actual conflict that precipitated the neurosis. In other words, *he substitutes talks on religion, ethics, and duty, for psychoanalysis*. This only shows that Jung does not understand how psychoanalysis cures. His technique is not psychoanalysis, but a combination of *persuasion and suggestion*. That re-education is an important factor in the cure of every psychoneurosis is unquestionable; Freud pointed that out long ago, but he did not stress it as Jung does because it is nothing new and because it is of minor importance. From all this it is evident that *Jungism consists in the rejection of the three great fundamentals of the Freudian teachings: repression, dream analysis and the unconscious*. On a psychoanalyst Jung makes the impression of one who accepts the unconscious from a theoretical knowledge only, not of one who became convinced of the reality of the unconscious by experience. Professor Jones showed this conclusively in his criticism of Jung's dream analysis.

It would be a comparatively easy task to show that Jung, like most controversialists, misrepresents the views and teachings of him whom he controverts. His reasons for opposing Freud may be readily enough inferred from his book, especially if one is acquainted with the history of the psycho-

analytic theory. Freud never attached much importance to Jung's association work as an aid to psychoanalysis; nor does he attach much value to Jung's "doctrine of complexes;" and he does not accept Jung's theory of a toxic element in dementia-precox. Speaking psychoanalytically we may say that Jung is burdened with an intense "god-man complex" ("der Gott-Mensch Complex" of Jones), an exaggerated narcissism, besides being under the subjection of profoundly repressed sexual complexes. Like untrained and cowardly patients he is running away from his repressed sexuality. In other words, Jung himself needs to undergo a psychoanalytic cure before he can know the truth of Freudism. A merely theoretical knowledge of Freud's teachings is of no practical value to anybody and is calculated only to serve as a bar to the dissemination of the truth. The inherited prudishness of centuries cannot be thrown off so easily. Jung's "de-sexualised psychoanalysis," so I call it, may find a few adherents in America but it will be only for a very short time. His book is much more likely, however, to be used only as a weapon with which to attack the Freudians.

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Charcoal in the Treatment of Membranous Enterocolitis.—Roidet reports excellent results following the treatment of this usually intractable condition by means of large doses of poplar-wood charcoal. From two to four tablespoonfuls of the latter are given daily, mixed with water and administered after the midday and evening meals. The efficacy of this remedy is said to be due to its power to absorb gases from the stomach and intestine, to its antiseptic effect, and to its action in stimulating the contractility of the stomach.—*Journal de Medecine de Paris*.

A BRIEF CONSIDERATION OF TRUE AND FALSE INCONTINENCE OF THE URINE IN AGED MEN AND THEIR MEDICAL TREATMENT.

BY

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There is scarcely a disorder more detrimental to the physical and mental well being of the aged man, and none more annoying, than that of urinary incontinence. Unable to venture far from home by reason of his disability, forced often to wear a urinal, to forswear attendance at social festivities or entertainments, subjected to disturbed rest, almost constantly wet garments, skin irritations, reflex disturbances—these are but a few examples of the many discomforts that help to render his state a most unhappy one. And more is he to be pitied inasmuch as in a goodly percentage of all cases medical and surgical science is unable to effect either a cure or an appreciable amelioration of the complaint.

Lest there be any misunderstanding as to what the terms true and false incontinence of the urine really mean, and I fear that to many of the profession the terms are still ambiguous, I trust that I will be pardoned for briefly describing them.

True incontinence, or enuresis, is that condition in which the urine flows out of the bladder as soon as it flows in. It is an involuntary action. The only point in common between it and the incontinence of retention, or false incontinence, is that it is manifested by an almost constant dribbling of urine. It is, however, unaccompanied by pain, desire to urinate, or any other of the symptoms predominating in the latter condition. If a

catheter be passed at any time the bladder will be found to be empty. Sometimes the bladder is capable of holding a small amount of urine which, however, escapes readily. The incontinence may be manifested only on sneezing, coughing, laughing, or on the slightest exertion, due to weakness of the bladder neck, which permits the abdominal muscles and the diaphragm to overcome it.

The causes of true incontinence are few. The principal factors in its production are cerebral or spinal disease or traumatism, inducing paralysis of the bladder; tuberculosis or malignancy of the bladder neck, paralysis of the sphincter, and operative or mechanical injury to the sphincter or urethra.

False incontinence, the incontinence of retention, overflow, dribbling—terms used quite interchangeably to indicate the same condition—denotes obstruction to the outflow of the urine. As in true incontinence, it is characterized by an almost constant dribbling, but the subjective sensations of pain, discomfort, desire to urinate, etc., are marked features of this variety. No matter whether or not the sufferer has previously, voluntarily or involuntarily, voided urine, the passing of a catheter will always reveal the fact that the bladder contains residual urine. Dribbling of urine in the male is practically always pathognomonic of overflow.

The causes of false incontinence are those conditions which produce retention, such as atony or paralysis of the bladder, however caused, hypertrophy of the prostate, stone, urethral stricture, etc.

A condition closely allied to the above is the so-called irritability of the bladder, a very common and trying complaint characterized by a frequent desire to urinate but productive of no other noteworthy symptom. It has a rather varied etiology inasmuch as

it may be caused by any disease of the genito-urinary tract, such as organic disease of the kidneys, stone, stricture, cystitis, prostatic disease, gonorrhea. Sexual excesses, hyperacidity or hyperalkalinity of the urine, constitutional diseases such as gout, diabetes, hysteria, infections such as rheumatism, as well as dietetic indulgences, are among the many contributing, if not the sole causative, agencies producing the disturbance.

The differential diagnosis between the above described conditions must, of course, be made and based on the physical examination of the subject. In general, the absence of pain leads one to surmise that inflammatory causes are absent.

It has been my good fortune to have served as physician in an institution where, in addition to many others, were housed about three hundred aged males, practically all of whom suffered from some disease either mental or physical. Incontinence of urine, the incontinence of retention, and bladder irritability were frequent complaints, and the causes for such were as numerous as those detailed above under the various headings. In many cases surgical measures were contraindicated, so that medical treatment alone could be administered. In some, no cause for the conditions could be found. Where a definite pathological finding was found remedial measures were employed toward its removal, but in spite of this, probably because the morbid states had progressed too far to be amenable to treatment, some patients demanded measures directed toward the urinary organs solely. Many such cases present themselves in private practice, and below I have outlined a treatment which, I think, will prove of benefit. However, a symptom prescriber is not a scientific physician, nor is

he doing justice to his patient, and if results are to be obtained, treatment must be guided by, and based on, causative factors when such can be detected. If surgical measures seem indicated, they are to be encouraged. It would be foolhardy indeed to attempt to relieve a dribbling that was caused by a stricture by medicinal measures alone, when surgery is the sole method by which a cure can be obtained. And again, if retention exists, catheterization must be employed in addition to the medical treatment.

First of all may be considered those measures tending to lessen the activity of the kidneys, but not detrimentally. When one considers the fact that the skin is a competent eliminative organ, this structure can be made to bear a great portion of the burden of ridding the body of its impurities and waste products. The insensible sweat averages 1500 c.c. per diem, but this may be increased by proper measures in such a way that the kidney output will be materially lessened and no harm result to either organ. The aged generally have plenty of time at their disposal, but it is their wont to be sedentary. Their skins are harsh and dry, it is true, and the activity of the sweat producing mechanism physiologically lessened, but much of this is to be explained by their decided aversion to exercise which, we know, stimulates the activity of the skin. Therefore exercise compatible with the strength of the patient is to be encouraged. The clothing should be such as will aid the activity of the sweat glands, but this must be regulated according to the season of the year. In winter, flannels are worn with comfort and benefit, but are not to be changed for lighter garments until the spring is well advanced. Cold baths are to be avoided. A hot bath, particularly before retiring, is not only soothing, productive of

sleep, relaxing, and cleansing, but it also aids in the evacuation of the sweat glands, and stimulates them to greater endeavor. Exposure to wet or cold is detrimental; moreover, the sufferer should not venture forth in inclement weather unless fully protected from head to foot.

The mental state should receive proper consideration. It is an old man's tendency to be testy, and should he be further disturbed by physical abnormality he is apt to be more so. Quiet pursuits that keep the mind busy, fresh air and sunshine, and the companionship of kindly souls will all prove serviceable. Not only is worry to be avoided, but also all sources of reflex nervous disturbance. A bed that is too warm has a tendency to inhibit the sphincter, and also tempts the sufferer to empty his bladder while in bed. Therefore the bed should be hard, and the bed clothing as smooth as possible and not too heavy. Sufficient covering should, of course, be provided, but there will be no danger of the patient's waking up at night because of being cold, if next to the mattress a light blanket is placed, this in turn being covered by a sheet. In this way cold air is prevented from coming up from the under surface of the bed—a point of practical value, not only for these sufferers, but also for those who sleep with "windows nailed open." It is well too that a urinal be close at hand, so that the patient may be able to void his urine without leaving the bed.

Rest is an all important factor. The cells of the body are with age, more catabolic than anabolic and so need all the rest they can procure, if for no other reason than a physiological one. "Balmy Nature's sweet restorer," sleep, should not be neglected. Too much rather than too little is the rule to be enjoyed. If possible a nap should be taken in the afternoon.

Diet is of great import. By no means is the stomach to be overloaded. It is better that four small meals be eaten than three large ones. Condiments, tea, coffee, and tobacco are to be avoided, though some leniency must be shown their habitues. If the patient has been a drinker of intoxicating liquors, he may be allowed small amounts of white wine or gin, but not beer or sparkling liquors. If a vegetarian existence can be borne, it is to be urged as there is no doubt that meats do harm. Pastries, fried foods, foods difficult of digestion or indigestible, foods that stimulate the urinary flow, as asparagus and certain berries, had best be omitted from the dietary. The evening meal should be light. Water may be taken during the day but if the patient does not retire until late it is well that little or none be taken after seven P. M.

The bowels are to be well kept open by such agents as increase the watery output. Epsom salts, any of the salines in fact, and compound jalap powder deserve first place.

Medicinally, I have had quite uniform and gratifying results from a combination of strychnine, hexamethylenamine, and tincture of belladonna. The formula I use is as follows:

Strychninae sulphatisgr. i
Tinct. belladonnae5x
Hexamethylenamina5iv
Elix. gentianae.

Syr. hypophos. comp. q. s. ad...5viii

Sig. One drachm in a glass of water three times daily.

Even in a case of tabetic incontinence the above proved so gratifying to the patient that it is now his standby. In a case of traumatic incontinence of twenty years' duration, the patient having had to wear a urinal for that length of time, a few weeks' use of it so controlled the urinary flow as to

enable him to dispense with the urinal during the daytime, and so toned the sphincter as to enable him to regain considerable control of his bladder during the night, manifested by a desire to urinate and an ability to hold the urine for a short period of time. In cases of dribbling due to hypertrophy of the prostate, and similar conditions, it has proved of value.

The only discrepancy that the above formula may show on first sight is as to the rationale of the hexamethylenamine. This agent is recommended only when the urine is alkaline, harm being ascribed to it if the urine is acid. However I have found the reaction of the urine no bar to its general employment. It may be advisable to substitute an alkaline salt should there be ground for belief that it causes burning, or is not otherwise acting favorably.

Many remedies have been proposed for the various forms of incontinence, but I shall not attempt to enumerate them. With the above methods I have had only favorable results, but I insist that they are to be used only in conjunction with such other therapeutic measures as seem adapted to each individual case.

To Conceal Egg Albumin.—When a patient has to take the whites of many eggs each day this is a good way in which to give them. Mix lemon juice with the whites of two eggs, beat lightly until the albumin is well dissolved, and add half a cup of water. Then strain through cheesecloth and serve in a glass containing pure chipped ice. In this way patients can be given from two to six eggs a day without their knowledge. This is especially useful for patients who would otherwise be nauseated with the mention of nourishment in any form.—*The Nurse*.

DOUBLE TUBAL PREGNANCY, BOTH RUPTURED.

BY

D. H. GALLOWAY, M. D.,
Roswell, New Mexico.

Was called to see the patient on August 11, 1915, she was having a slight menstrual flow which had continued for two weeks and had a bad odor. There was some abdominal distress. She had missed the previous menstrual period and although there was little general menstrual disturbance, she assumed that she was pregnant. The present symptoms suggested that there had been an early abortion. Her temperature was 99 to 102.

Rest in bed having no effect, on the 21st she was taken to the hospital, anesthetized for examination and curettement performed. A careful examination under anesthesia revealed nothing but a slightly enlarged and a slightly fixed uterus and an indefinable fullness on the right side. With the curette I found a patch of placenta or granulation tissue in the uterus but nothing looking like an embryo. This procedure stopped the flow but the pain continued and became worse.

Another examination five days later showed an increased fullness to the right of the uterus but no tumor could be made out, nevertheless the likelihood of the trouble being extra uterine pregnancy was so strong that I requested her husband to call in Dr. Phillips. His examination revealed nothing more than I have here recorded. I then advised operation which was accepted.

That afternoon she was anesthetized by Dr. J. B. Keaster and with the assistance of Dr. W. W. Phillips I operated.

A medium incision was made and when the peritoneum was opened the intestines were dark, injected and, at first sight, I thought we had a case of tubercular peritonitis. On depressing the intestines with my hand there welled up a great quantity of perfectly fluid and very black blood. At least a quart of this fluid was removed with large gauze sponges, the uterus was grasped with a tenaculum and the right side quickly explored. The right tube was a half inch or a little more in diameter, it glistened and was as black as charcoal. It was infiltrated with black clotted blood, as was the broad ligament into which the tube had ruptured. There was little or no hematoma, the blood being in small clots throughout the broad ligament which was half an inch thick.

The tube was covered with small blisters like pinheads which I took to be the beginning of necrosis. The tube was ligated and removed. No fresh hemorrhage occurred.

I then examined the other side and found back of the uterus and to the left a tumor, seemingly as large as the fist, adherent to the rectum and the intestines. On bringing it into view I found it to be the left tube and ovary in a mass. The tube was five inches long and one and one-half inches thick, with protuberance on one side as large as a small lemon, where it had ruptured. The tube, the intestines and the ovary were all adherent and covered with black clots. The ovary was one and one-half inches in diameter, soft and highly injected.

I incised it and shelled out a white tumor half an inch in diameter made up of layers like an onion. The tube and ovary were ligated and removed after adhesions to the surrounding structures had been loosened.

The process required many ligatures.

The abdomen was wiped out as well as possible and closed with catgut sutures except a small opening left for a small wick drain leading into the cul-de-sac. No embryo was found.

The operation required 51 minutes and the patient was put to bed in fairly good condition.

My conclusion is that, though the two pregnancies may have occurred simultaneously, the first ruptured into the broad ligament and the embryo died. The other ruptured into the free abdominal cavity and continued to grow. The hemorrhage must have been slow as there were no symptoms approaching shock or collapse.

The patient had complained for several years, and before her marriage, of "ovarian trouble" on the left side.

The patient was greatly nauseated for three or four days following the operation and badly bloated but in about a week all unpleasant symptoms disappeared and from that time on her recovery was uneventful. The drainage was very profuse and the drain was not completely removed until the sixth day. There was no pus at any time.

To Know thyself—watch others act. To understand others, look into your own heart.—*Richard's Almanack.*

Flat Stomach Tube.—In the *Medical Record*, J. Fuhs, M. D., Brooklyn, calls attention to the value of the flat stomach tube in cases in which the use of the ordinary tube is beset with difficulties. It should not be used for lavage. It has special advantages in nervous cases and can be introduced more easily and quickly, conforming somewhat in shape to the esophagus and being more flexible. The flat tubes are made in various sizes.



MODERN REMEDIES



Conducted under the Editorial Direction of Dr. J. W. Wainwright.

Picric Acid in Burns.—Tuder, (*International Journal of Surgery*), states that the most widely used moist dressing for burns is a saturated aqueous solution of picric acid. It is soluble in water to 1.2 per cent. Experiments made and reported by Ehrenfried, determined picric acid to be fifty times as powerful an antiseptic as phenol solution of the same percentage strength. It coagulates albumin and thus causes a protective scab to be formed over a denuded surface, ruptured lymph spaces are sealed and exposed nerve endings protected, thus favoring epithelial proliferation.

Tuder's mode of procedure is to apply several thicknesses of ordinary sterile gauze over the burn and then to thoroughly saturate with the picric acid solution, this to be covered with oiled silk and to complete the dressing a gauze bandage over all is placed. Such a dressing will exclude the air, usually promptly relieve the pain. The solution is non-irritating and analgesic. Should pain return during the absence of the attendant, the nurse is instructed to again saturate the dressing, (obviously after removing the bandage and oiled silk). The dressing is removed on the third or fourth day, all vesicles punctured, reapplied as before, and the procedure repeated every four or five days until healing is complete. As systemic toxic effects have been reported to follow the application of picric acid over extensive areas of burns, it will be advisable to repeatedly examine the urine. Should it become cloudy, the picric acid solution dressings should be removed and other applications used. An ointment of picric acid two to ten percent. in petrolatum may be advantageously employed.

Dr. Tuder also refers in his article to the open air treatment of burns, in which event

the surface is cleansed in the usual way, blebs and necrotic tissue are removed as soon as possible and the entire area left open; lesions are exposed to the sunlight at first for half an hour, the exposure being gradually increased to an hour or more a day; the temperature of the room is kept high to favor drying as well as the function of the skin, the air being kept clean and pure. Pain under this treatment usually subsides quickly. In burns of the first degree the nerves are exposed and pain is sometimes severe, in which case the author employs the picric acid solution. This method has a further advantage in that it satisfies the patient that everything is being done. Stearate of zinc and zinc oxide are used as dusting powders in the open air treatment. Vesicles should be drained and when pus is present the scab removed and the parts thoroughly cleansed with normal salt solution or hydrogen dioxide, and then one of the above dusting powders applied. It will be found wise to see that the bed and body linen are kept clean and repeatedly changed. Cradling the bed clothing over the lesions will of course be attended to. With such treatment carefully supervised or personally done will insure good results.

Colloidal Sulphur in Rheumatism.

Loeper and Vahrami, (*Progress Medical*, August, 1915), reports having obtained exceptionally good results in acute articular rheumatism with intravenous injections of colloidal sulphur. They report seventeen cases, some of whom were under observation in military hospitals in France. The agent was used in daily doses of 33 to 66 milligrams. In all of the cases pain was

relieved in twelve hours after injection; in some instances in two hours. The temperature was reduced on the day following the injection. In the mild cases one or two doses sufficed; more serious cases required four or five doses, while in serious or more severe cases ten doses were necessary to bring about an apparent cure. In five of the cases the colloidal sulphur was employed after treatment by the salicylates had failed to bring about any relief in either the course of the disease or intensity of the symptoms. These injections are followed by marked systemic reactions: first a violent chill in forty to fifty minutes, lasting about twenty minutes, accompanied by rise of temperature, which may reach 100.4 to 105°F. in the course of one to two hours, when it suddenly returns to normal. They found this rise of temperature more pronounced in the acute cases than in the chronic ones. Larger doses of the remedy also cause an increase in temperature. These injections of colloidal sulphur also cause a rise in blood pressure, as well as in the number of red blood cells and transient leucocytosis.

They declare that there is apparently an elective, though not necessarily a specific, rôle played by colloidal sulphur in acute articular rheumatism.

Neosalvarsan in Relapsing Fever.—

Papendieck, (*Muenchener Medizin Wochenschrift*, April 20, 1915), of the military hospital at Schoenbeck-Elbe reports a case treated during the previous winter, a young soldier suffering from recurrent fever, contracted in Russia. The patient was severely bitten by body lice, but did not know whether he had been exposed to bedbugs or not. He had had fever for several days before admission to the hospital; after entrance his temperature was found to remain at about 40°C. for four days and then to drop to 37°C. at which point it remained for seven days, when it abruptly returned to 40°C. Recurrent fever being diagnosed spirilla were sought microscopically and positively demonstrated, when 0.6 gram neosalvarsan dissolved in 10cc. of water was given intravenously, resulting in half an hour of a fall to 35.5°C. It remained

at 36° to 36.5°C. for about nine days, with an intermediate but gradual rise and fall, when it again suddenly rose to 40°C. Examination, however, showed the spirilla greatly reduced in numbers.

A second injection of 0.3 gram of neosalvarsan was injected as before in 10cc. of water, and again the temperature after three hours dropped to its former level. No further neosalvarsan was given, the febrile crisis less in intensity. After a month from beginning the treatment the patient was sent to a recuperating home with every prospect of speedy recovery and return to the ranks. No unpleasant effects were noted following the treatment.

Quinine and Urea Hydrochloride as an Anesthetic.—

J. L. Amster, (*New York Medical Journal*), prefers this combination freshly made, $\frac{1}{8}$ to $\frac{1}{4}$ of a one per cent. solution to which is added 5 to 10 drops of a 1 to 1,000 solution of adrenalin to 1 or 2 ounces. He then sterilizes the skin with tincture of iodine in the usual way, when the quinine and urea solution is slowly injected along the entire course of the proposed incision: first the skin followed by the underlying tissues being rendered anesthetic. Nerves should be isolated and thoroughly infiltrated with the solution. Usually complete anesthesia is obtained in from fifteen to thirty minutes and this lasts for an indefinite time. The initial pain from puncture may be avoided by ethyl chloride. An injection of morphine and atropine may be given an hour before the operation if patient is unduly nervous.

Dr. Amster declares that sloughing is due to a too strong solution or an old stock solution; incomplete anesthesia to failure to anesthetize the skin before infiltrating the deeper tissues; slow healing to faulty technic; over distention of the deeper tissues.

Vaccines in Sciatica.—Zapffe (*Journal American Medical Association*, January 16, 1915), reports a case of sciatica which appeared some several weeks after an acute attack of gonorrhea. The microscope disclosed staphylococci and a diphtheroid

bacillus in the urine, from which an auto-genous mixed vaccine was made and injected in doses of 50,000 to 5,000,000. Serum injections were given, after which the patient recovered. The author does not believe that this form of treatment for sciatica has received the attention it deserves. He also asserts that each case should be carefully studied and the dose and reaction carefully noted. The source of infection should be accurately determined. All sources of sciatica should be investigated before the vaccine treatment is resorted to.

Analgesics other than Opiates.—Wm. M. Gregory, (*The Medical Standard*, November, 1915), declares that for dysmenorrhea and irregular menstruation, gelsemium, veratrum, bryonia and pulsatilla will give great relief. These remedies lower arterial tension, relax muscular spasm and aid and increase elimination rather than checking it as do the opiates. For a bronchial or catarrhal cough he finds gelsemium, veratrum, bryonia and ipecac give relief. When there is much irritation about the throat or larynx he adds hyoscyamus or lobelia or both.

In the aches and pains of infants and children he uses matricaria (German chamomile). In the absence of contraindications, he gives gelsemium for congestive headache, congestive neuralgia, grip, acute coryza, bronchitis, gastritis, cystitis and dysmenorrhea.

Hyoscyamus, Gregory believes the best agent to bring about sedation without narcosis, without habit producing properties. It is, he declares, the one remedy that will really hold paralysis agitans in check. All of these remedies should be given in the form of the specific medicine, made from the green or fresh plant. He declares that they will fail in releasing pain when used as a dry plant preparation.

Death from Emetine.—Snell, (*China Medical Journal*, May, 1915), reports the death of a child, girl, five years of age who was given in all, 10.6 grains of emetine during a period of twenty-one days for amebic

dysentery. A rash first appeared, followed by a neuritis and paralysis of the muscles of deglutition, the latter being the immediate cause of death.

Sugar Solution in Postoperative Treatment.—Barbee, (*Northwest Medicine*, September, 1914), declares that maintenance of proper fluidity of the blood is among the most important essentials in postoperative recovery. Salt solution by its reactions is somewhat irritating, while a solution of cane sugar, half ounce to a quart of water is not only nonirritant, but is rapidly absorbed, and exercises a general stimulating effect. He is convinced that postoperative shock is lessened, the circulation equalized, vomiting diminished and renal excretion increased by sugar proctoclysis.

Coal-tar in Eczema.—Thebierge, (*Progrès Médical*, April 11, 1914), points out the especial value of coal-tar in the treatment of certain varieties of eczema, those with exudation and edema. The greater the local moisture and acuteness of the condition, the more likelihood of rapid and favorable results.

Chlorinated Alcohol.—A very potent antiseptic is easily made by passing chlorine gas through alcohol until saturation is completed; then cork securely and keep in a dark and cool place. This can be used in full strength instead of iodine tincture for sterilizing the skin in surgical procedures. It neither stains nor irritates the skin, according to the *Medical Council* (October, 1915).

Alkaline Salts in Rheumatism.—It is claimed that the alkaline carbonates are not as serviceable in rheumatism as are the acetates and citrates, the latter bringing out acids while absorption is taking place. Potassium salts are preferable to those of sodium. The carbonates, moreover, are neutralized by the acid gastric secretion.

RATIONAL ORGANOOTHERAPY

Conducted under the editorial direction of Dr. Henry R. Harrower.

Adrenal Insufficiency and Adrenal Therapy in Army Practice.

—There is a great deal of practical helpfulness in the report of the experiences of Sergeant in his work with adrenal therapy in the medical and surgical conditions resulting from war. For many years Sergeant has insisted that the adrenal glands played a much more important rôle than was then admitted and he deserves credit for establishing "*l'opothérapie surrénale*" upon a solid and practicable basis. It was Sergeant who gave to the profession the "white adrenal line," referred to previously in this department, by means of which one can diagnose acute adrenal insufficiency. (For the benefit of some of our readers Sergeant's "*ligne blanche surrénale*" is a dermatographic sign which consists of a white line on the abdomen which follows pencilling with the finger-nail. It persists sometimes for two or three minutes and is an indication of acute hypoadrenia. —Ed.)

Sergeant (*Bull. Acad. Med. Paris*, September 7, 1915) has found many opportunities to verify his previous opinions and experiences with the relation of the adrenals to various syndromes. His work at a base hospital has confirmed the frequency of acute hypoadrenia from toxic-infectious influences, hemorrhage or shock. He believes that it is possible for an individual to have a latent tendency to adrenal insufficiency which under stress, is suddenly aggravated with serious results. Such conditions are encountered almost daily in sick and wounded men from the front.

In cases of this kind collapse is much more likely to supervene in typhoid, pneumonia or other serious infections; and in numerous cases Sergeant found that it was possible to tide his patients over this dangerous phase by giving hypodermic injec-

tions of a solution of the adrenal principle.

The success of Naamé of Tunis in the treatment of cholera and dysentery with adrenalin (see "Adrenalin in Cholera, etc," *AMERICAN MEDICINE*, September, 1915, p. 716) has been duplicated by Sergeant in several cases of the algid form of choleric-form diarrhea. Two of Sergeant's cases are of especial interest. They were brought to the hospital completely collapsed; the asthenia was absolute. One had for a long time manifested symptoms of an abortive form of Addison's disease; the other had had recurrent attacks of asthenia dating from a severe typhoid fever some years previously. Both cases presented the typical dermatographic line, extreme hypotension, reduced temperature and a decided tendency to collapse at the slightest provocation; but both rallied promptly under the adrenal treatment.

Incidentally this information is of just as great practical value in general practice as it is in the special conditions due to war. Hypoadrenia is not infrequent in the daily routine work and its relation to the severe forms of infectious disease is of extreme importance. (See "A Serious Complication of Infectious Diseases," *AMERICAN MEDICINE*, September, 1915, p. 716-7).

Under the difficult circumstances of trench warfare the condition of the wounded is especially hard to treat, and the additional shock of a general anesthetic is liable to extinguish the flickering flame of life, unless the surgeon appreciates the important aid that can be secured from adrenin. Sergeant urges that all ambulances, first-aid stations and hospital trains should be supplied with preparations of adrenin for use in preventing and combating adrenal insufficiency. Even if the patient's adrenals seem to be working properly, this

procedure is an excellent tonic to the whole cardio-vascular system; and he is convinced that many of his patients owe their lives to this remedy. This may be equally true in many of the circumstances of every-day medical and surgical practice.

Generally speaking an average dose of a 1:1000 solution in prophylactic practice is from 5 to 15 minims by hypodermic injection; in the treatment of severe cases as high as 30 minims, three times a day, has been recommended. In cases where it is possible the temperature, pulse and blood pressure should be the physician's guide to the amount and frequency of the dosage.

The Possible Value of Hepatic Extracts.

—Most physicians consider the main function of the liver as that of bile-production; on second thoughts they remember the importance of its manufacture and storage of glycogen as well as its influence upon the genesis of urea. It is granted that these several and widely divergent functions are of extreme importance, but the less well-known detoxicative and other powers are worthy of emphasis.

In addition to numerous ferments, (proteolases, nucleases, adinases, oxidases, etc.), and the well-known bile salts (sodium glycocholate and sodium taurocholate) and pigments (bilirubin, biliverdin and urobilin) the hepatic cells also produce other chemical substances of the nature of hormones.

The long and successful use by numerous French physicians of repute, of various liver extracts shows that such preparations contain active and useful therapeutic agents. They have not been content with the administration of several forms of bile and bile salts, but administer the vacuum-dried liver parenchyma in powder or tablet form.

The study of the functions of the liver has been carried on for many years, and, as yet, we are still very much in the dark as to how this remarkable organ performs its equally remarkable work. That the liver itself is a source of hormones has been suggested by several writers, and the fact that its detoxicating function is conceded to be greater than that of any other organs seems to emphasize this suggestion. In

this connection, in his monograph "The Therapeutic Promise of the Internal Secretions," Leonard Williams says: "There can be no doubt of the superiority of cod-liver oil in fortifying the tissues against the bacillus of tuberculosis, neither can there be any doubt that cod-liver oil is different from all other oils in this respect. Now it is evident that its superiority is due to the fact that in addition to the oil, it contains the internal secretion of the liver of the fish. It is not, of course, to be supposed that this internal secretion enters at once into the human *liquor sanguinis*. The way in which it acts must in the present state of our knowledge, be a matter of mere conjecture. Inasmuch, however, as we know that certain of the internal secretory glands exercise certain antagonisms to certain others, so that an excessive secretion in one will provoke an increased activity in one or more of the others, it is very probable that this biliary secretion of the cod, when introduced into the human economy acts as a stimulant to one of the normal internal secretory glands, and that the secretion of the one so stimulated is inimical to the development of the tubercle bacillus. Some of these internal secretions are subtle entities, and it is a significant fact that the darker and more crude the cod-liver oil, the more efficacious it is; the refining process deprives it of many of its virtues, whereas the dried extract of the cod's liver is almost as active as the crude oil."

The rôle that the administration of liver substance or extract plays depends upon the so-called "lesser functions" of this organ. These are conveniently classified under the following four heads:

1. The regulation of nitrogenous metabolism and especially the production of urea.
2. The regulation of the normal sugar content of the blood and the preparation and storing up of glycogen.
3. A reported noticeable influence upon the coagulability of the blood.
4. The destruction of toxins and the regulation both by inhibition of production and destruction of completed substances resulting from intestinal fermentation and putrefaction.

Lorand believes, and his opinions are corroborated by Gilbert H. Straus and

others, that the liver is a gland with an internal secretion which is strongly antagonistic to the intestinal poisons which are brought to it from the intestine by the portal vein.

Preparations of liver tissue have been tried with some success in the treatment of digestive affections and more especially constipation; for hepatic extract has a definite homostimulant influence upon the functions of the liver itself, as regards both its presumed internal secretion and bile production. In hepatic insufficiencies associated frequently with a decrease of solids eliminated in the urine, especially in the amount of urea and other nitrogenous compounds, hepatic extract has served to good advantage.

The capacity of animal extracts to stimulate the function of the corresponding organ and, in a degree at least, to favor its regeneration, has led to the use of hepatic extract in the treatment of cirrhosis of the liver. Experiences in the treatment of atrophic cirrhosis were much more encouraging than in the hypertrophic form.

Emphasis is laid on the influence which this preparation is stated to have upon the coagulation of the blood, and it has been used in disturbances of the blood coagulating equilibrium, notably in hemophilia and in purpura. More than fifteen years ago, in an attempt to isolate an active principle from the liver, Mairet prepared several substances which had an influence on the coagulation of the blood, while Gilbert and Carnot have used liver preparations in the treatment of hemoptysis, especially in tuberculosis with very encouraging results. Professor Gilbert was the first to direct attention to the hemostatic action of liver extract in epistaxis and other hemorrhages. Several writers have noticed while using hepatic extract in the treatment of cirrhosis of the liver that the hemorrhage from hemorrhoids and also hematuria have been simultaneously abated.

As yet, however, this form of organotherapy does not seem to have aroused great enthusiasm in this country, although there can be no doubt of its therapeutic efficiency in suitable cases.

The Value of Corpus Luteum.—In the discussion of an interesting paper on

luteal therapy (*Amer. Jour. Obs.*, November, 1915, p. 884), Gilliam makes the following confession: "I have had experience with the luteum extract, both favorable and unfavorable, and in the revision of my book on gynecology I have given it a kind of black-eye; nevertheless, I have had some elegant results from it, especially when its administration is carried to physiological effect and maintained for a while."

Evidently this writer revised his book after an unsatisfactory experience with corpus luteum, for others, like him, have frequently "had elegant results" from its judicious (and persistent) use. So when one happens to read a derogatory statement regarding this, or for that matter any other organotherapeutic product, it is well to remember that it may have been written at an inopportune time, and that its author may have changed his mind since, just like the one whose admission is quoted above.

Adrenin¹ in Sudden Heart Failure.—

In the department of therapeutics which is a weekly feature of the *Journal of the American Medical Association* (October 16, 1915, p. 1366) twelve procedures are suggested for the emergency treatment of sudden cardiac failure.

One of these will be of interest to our readers for several reasons: "Epinephrin (adrenin¹) may be given in a dose of 5 drops on the tongue, which may be repeated in half an hour if advisable . . . All of the foregoing (including strychnine, hot coffee, camphor, etc.) are quick acting treatments."

While it is not definitely stated, it is presumed that the quickly obtainable 1:1000 solution of adrenalin chloride is referred to in the foregoing statement. At least this is an effective though fleeting circulatory stimulant. It is of special interest to note that it is suggested that it be given on the tongue and that it is "quick acting," despite frequent statements in the same journal and elsewhere, that the organotherapeutic preparations are not effective when given by mouth. This further emphasizes our

¹ It will be recalled that the nomenclature suggested by Cannon is now being followed and unless a specific preparation is referred to, the term "adrenin" will be used.

opinions as outlined in the item "Giving Organotherapeutic Products by Mouth," AMERICAN MEDICINE, April, 1915, p. 253.

In the same article another measure recommended for the treatment of sudden heart failure is an injection of 1 cubic centimeter of pituitary liquid, to be repeated in two or three hours if necessary. Organotherapy is as efficient in certain acute and urgent conditions as it is in the chronic and intractable disorders in which it is successfully applied with considerably greater frequency.



Treatment of Gastric Ulcer.—Cohnheim (*Med. Record*, September 11, 1915) considers that there are two drugs for internal administration, which are of value. These are silver nitrate and bismuth subnitrate. The first is usually given for the acute chlorotic ulcer, and the second in the other forms. The dose of nitrate of silver is half a grain in a wineglassful of water from a quarter to half an hour before meals. One teaspoonful of bismuth is stirred up well in a glassful of warm water, and taken each morning before breakfast, the patient lying on her right side for half an hour afterwards.

If the pain is still not relieved, belladonna must be combined with the bismuth, or an alkali taken one or two hours after food.

℞ Extracti Belladonnæ Sicci . . gr. iij—v.
Magnesi oxidi
Sodii bicarbonatis ana 3vj.
Misce. Fiat pulvis.

One teaspoonful to be taken one or two hours after meals, two or three times a day.

℞ Extracti Belladonnæ gr. iij.
Bismuthi subnitratiss 3iv.
Misce.

As much as will cover the point of a knife to be taken after meals.

For spasm of the pylorus, from half to one wineglassful of olive oil should be taken before breakfast, and one or two teaspoonfuls before the mid-day and evening meals, or the following:

℞ Tincturæ Belladonnæ 3j—iss.
Olei Amygdalæ dulcis 3j—iss.
Ovi vitelli i. vel ii.
Aquam destill. ad 3viss.
Misce. Fiat emulsio.

One tablespoonful to be taken before meals three times a day.

Treatment of Ringworm.—For superficial herpes tonsurans, Salinger (*Correspond. Bl. f. Schweizer Aerzte*, September 18, 1915) advises painting the spot, at least twice a day, carefully with tincture of iodine. The use of the following ointment will bring about a result more quickly:

℞ Acidi Salicylici 3ij. °
B-Naphtholis 3lss.
Resorcinl 5i.
Adipis lanæ ad 3iij.
Misce. Fiat unguentum.

A thick layer of this ointment is spread on gauze and fixed in place with a bandage. A fresh application is made in 24 hours, and after another 24 hours the skin will have blistered. The blister is emptied, and dressed with an inert powder, like talc.

Iodine is of no service in the deeper going affections. For these the ointment is mixed with:

℞ Acidi Salicylici gr. xlv.
Olei Rusci 3ij.
Olei Olivæ ad 3iij.

The affected area is washed with a 1/2000 solution of perchloride of mercury in spirit, and the mixture of ointments is then applied. This is repeated daily, and it is claimed that it will cure the most obstinate case without epilation being necessary.

The Management of Respiratory Inflammations.—The *Medical Council* (November, 1915) presents the following don'ts in the treatment of upper respiratory inflammations. Don't debilitate the patient with a lot of depressing antipyretics. Don't "dope" him with a heavy dosage of the usual unscientific coryza formulae. Don't tie up his secretions. Don't derange his stomach with so-called cough syrups. Don't forget to look out for diphtheria or one of the exanthems. Don't forget prophylactic inoculation of all exposed persons in such cases as result in diphtheria. Don't forget to isolate any suspicious case; the face getting pale or ashy and the lips losing color may be sufficient sign of impending danger. Don't allow an oil stove in the patient's room. Don't oppress the chest with unduly heavy applications. Don't forget to watch the case for any impending complications. Don't forget that oil sprays are less apt to lead to extension of purulent inflammation than are aqueous ones. Don't forget that atropine is contraindicated when secretion is viscid or tenacious, ammonium chloride then being indicated. Don't neglect a culture in cases where diagnosis is uncertain. Don't forget that iced compresses to the throat do a world of good. Don't forget to give plenty of water. Don't allow food which is hard to swallow. Don't forget that salicylate is of marked value when articular symptoms begin, when

follicular tonsillitis seems impending, and in many cases fever; give enough to bring results, but watch the heart. Don't call everything "grippe." Don't forget to keep the nasal passages free especially in children. Before leaving case, don't forget to analyze the urine if any suspicion of renal involvement. Don't allow marked dryness of air in patient's room. Don't allow patient to talk much. Don't overdo expectorants, especially in acute stage. If the case becomes chronic, especially in bronchitis, don't give narcotics, especially if it can be avoided.

Peroxide of Hydrogen in Meningitis.

An interesting experience with intraspinal injections of hydrogen peroxide in epidemic cerebro-spinal meningitis is reported by Ponticaccia (*Pediatrics*, September, 1915). The patient, a boy of 10, had an extremely severe infection and no benefit was obtained from the injection of antimeningococcus serum; but prompt and permanent improvement followed an intraspinal injection of 1 cc. of hydrogen peroxide in a 20% solution. Immediately after the injection the boy fell into a calm sleep as if a narcotic had been given; there was decided improvement when he awoke six hours later and the temperature dropped from approximately 105° to normal for two days. It then rose again, to subside after a repetition of the injection. The third day he was given an injection of 2½ cc. of peroxide, diluted with distilled water to the same quantity as before—5 cc. The case progressed to complete recovery.

A New Treatment of Trachoma.—A novel treatment of trachoma is recommended by Löwenstein and Herrman (*Deut. med. Wochenschr.*, September 2, 1915). It consists in expressing the trachomatous granules, which were then rubbed up in a mortar with normal salt solution and injected hypodermically without further elaboration. Many experiments were made and it was concluded that only the crude disease product could be used in the production of antigens.

No reaction followed this injection; but 8 or 10 days later the disease began to improve and at the end of four or five weeks the lesions had become cicatrized. In several of their cases trachomatous pannus disappeared and the cornea cleared up. The return of vision was remarkable.

The Roentgen Ray in Venereal Bubo.—Kall (*Münch. med. Wochenschr.*, October 19, 1915) presumed that the good results which often follow roentgenization of tuberculous glands might possibly be duplicated in venereal buboes, and he here reports the experience of this treatment during the past eighteen months.

He has secured such uniformly good results that he urgently recommends this as a routine

treatment, especially in cases where extensive inflammation has not yet developed. This treatment is more suitable for cases in the pre-suppurative stage, and exposure to the x-ray reduces the pain and prevents pus formation. In some cases even when fluctuation was elicited, the leucocytes were apparently all absorbed; and the fluctuation, pain, redness and infiltration gradually disappeared. When there is abscess formation, the pus must be evacuated; but roentgenization causes the secretion to diminish and facilitates quicker healing.

Kall recommends doses of 10 or 20 and uses a 0.5 mm. aluminum filter.

B. Bulgaricus in Diphtheria Carriers.

In conversation with a prominent practitioner the other day, attention was called to the value of suspensions of virile *Bacillus Bulgaricus* as a local remedy to clear up lingering diphtheria organisms on the pharyngeal walls.

Occasionally a case of diphtheria will recover completely so far as the objective symptoms are concerned, but the reports from the municipal laboratories indicate that throat swabbings are not free from the *b. diphtheriae*. In such cases a gargle of cultures of the *b. bulgaricus* usually clears up the throat very quickly. Perhaps it is more convenient thoroughly to swab the throat two or three times with the liquid culture just as it is obtained commercially. This causes practically no inconvenience and has never failed to accomplish the desired end, although in no case were there any clinical manifestations to be modified.

It is quite likely that similar procedures might be of still greater benefit if used in conjunction with the orthodox treatment of diphtheria.

A New Treatment for Articular Effusion.

At one of the last sessions of the Académie des sciences Dr. Raoul Bayeux of Paris (*Jour. of N. Y. Med. Soc.*) reported a new method of treating hydrarthrosis and hemarthrosis of the knee. First, an evacuating puncture is made with a trocar, then oxygen under pressure of 70 c. m. of water is aseptically injected into the joint. These injections are repeated every two or three days and five or six injections of the gas are generally sufficient to produce perfect cure.

The Significance of Blood-Pressure in Infectious Diseases.—Schwarzmann (*Zentralbl. fuer inn. Med.*, No. 31, 1914). The writer concludes, from his observations, that a high diastolic pressure indicates a paresis of the abdominal vessels, while a fall both in systolic and diastolic pressure signifies a relaxation of the general vascular tonicity. A diminution of the systolic pressure, accompanied by a rise of the diastolic pressure, points to an impairment of the cardiac energy.

GENERAL TOPICS

Resolutions adopted by THE AMERICAN MEDICAL EDITORS' ASSOCIATION.—Whereas, The American Medical Editors' Association believes that the principle of the freedom of the press bears unusual force in relation to the medical press, discussing subjects germane to medical progress, and

Whereas, the *Southern California Practitioner* has been indicted by the United States Postal Department because of the publication of an article dealing with the "sex question" which appeared in the issue of March, 1914,

Be It Resolved, that the American Medical Editors' Association express to Dr. George E. Malsbary, Editor of the *Southern California Practitioner*, its confidence and moral support in the pending action.

Be It Resolved, that the American Medical Editors' Association assure Dr. Malsbary of its willingness and readiness to afford him any assistance and support within its power according to the Constitution and By-Laws.

IRA S. WILE,	} COMMITTEE.
C. W. FASSETT,	
HENRY R. HARROWER.	

October 19, 1915.

The Nine Chief Causes of Death.—In the United States Census report for 1913, we find that the diseases, nine in number, causing the greater number of deaths in the registration area or 65 per cent. of the total population were, tuberculosis, 93,421 deaths; heart diseases, 93,142 deaths; pneumonia, 83,778 deaths; nephritis, 65,106 deaths; diarrhea and enteritis, 57,080 deaths; cancer, 49,928 deaths; cerebral hemorrhage, 47,220 deaths; diphtheria, 11,920 deaths; typhoid fever, 11,323.

The Absorptive Power of Fuller's Earth and Its Antidotal Value for Alkaloids.—Bernard Fantus, Prof. of Pharmacology and Therapeutics, College of Medicine, University of Illinois, in the *Journal of the American Medical Association*, May 29, 1915, summarizes an article on the above subject as follows:

Alkaloidal Fuller's earth compounds do not act on the stomach; but are gradually dissociated in the intestine, producing delayed and milder action.

Fuller's earth has antidotal value in morphine, cocaine, nicotine and ipecac poisoning. It has less value in strychnine and aconitine poisoning, though even in these conditions it is

capable of saving life, when combined with sodium dihydrogen phosphate. In colchicine poisoning it is of small value.

The power of absorbing alkaloids is strongly developed in some specimens of Fuller's earth and very feeble in others. The absorptive value of commercial Fuller's earths should be stated by dealers; only specimens of high activity should be used in the treatment of poisoning. Lloyd's reagent possesses this power to the highest degree.

Fuller's earth is not identical with Kaolin, as the U. S. Dispensatory and National Dispensatory would lead us to believe. It is a substance with markedly different properties.

The power of absorbing alkali is not like or proportionate to, nor parallel with the power of absorbing alkaloids. Acidity is necessary to enable Fuller's earth to absorb alkaloids; though this is not a measure of the degree of this power, yet those specimens devoid of acidity like Kaolin or Pear's precipitated Fuller's earth fail to absorb alkaloids, while those of lowest acidity are lowest in the list of alkaloidal absorbents.

Hugh McGuigan and E. L. Ross (*J. A. M. A.*, May 1, 1915, page 1494) and in the *Philadelphia Medical Journal*, March 21, 1903, by Alfred Gordon, also W. W. Keene, *Philadelphia Medical Journal*, March 28, 1903, report strychnine symptoms after large doses of morphine.

The Critic and Guide Absorbs Another Journal.—*The Physicians Drug News and Office Practitioner* has been acquired by The Critic and Guide Company and will be consolidated with *The Critic and Guide* beginning with January, 1916. The consolidated journal will remain under the editorship of Dr. William J. Robinson.

The Society for the Advancement of Clinical Study announces a continuation of its bureau of information relative to surgical and medical clinics held in New York City. A bulletin board is maintained for this purpose at the Academy of Medicine, 17 West 43rd Street, in charge of a competent attendant who will be on duty from nine to twelve in the morning and two to six o'clock in the afternoon to answer inquiries. The special telephone number is 3375 Bryant. The clinics held at the various hospitals are posted on a special circular of information, which will be mailed to outsiders at 50 cents per week to cover postage, etc. The bulletin board maintained at the Academy also contains the daily clinics as well as those held at stated hours in various hospitals. The facilities thus offered afford to visiting physicians who are interested in observing special operations and operators or clinicians, an opportunity to obtain the desired end with the least trouble.

The success of the enterprise is shown by the constantly increasing number of inquirers who make use of these facilities, and it is hoped by this means the large and unexcelled opportunities for medical research and observation afforded by New York City will be made more accessible to those who may desire to make use of them.

Association of Military Surgeons of the United States.—The Secretary of the Association of Military Surgeons of the United States and Editor of the *Military Surgeon* announces that the headquarters of the Association and of the *Military Surgeon* have been transferred from Chicago to Washington, D. C., and requests that hereafter all communications, periodicals for exchange, books for review, etc., be addressed to the newly elected Secretary-Editor, Lt. Col. Edward I. Munson, M. C., U. S. Army, or to the Association, as follows:—The Association of Military Surgeons of the United States Army Medical Museum, 7th & B Sts., S. W., Washington, D. C.

Dandruff and Cancer.—Dr. Isadore Dyer (*New Orleans Med. and Surg. Jour.*, July, 1915) mentions among the kind of things on the skin which must be observed for cancer, all moles or warts which grow in size; all moles which change their color and grow dark brown or black; all small scaling spots which grow thicker and scab or bleed easily; all scaling warts, especially on the lips, the ears, the eyelids, the cheeks or the hands. He further states that: "Perhaps the most frequent excitant of all, so far as skin cancer is concerned, is dandruff. It falls from the scalp and lights on the ear, eyelids, nose, neck, lips and face, and if there is already a scaling spot, or a thickening, or a wart, a mole, or a gland ready to receive the dandruff scale, it sets this spot alive with activity and it goes on to form a skin cancer. Probably sixty per cent. of skin cancers are due to this cause, and many a cancer has been prevented and may be prevented by curing the dandruff or by preventing it."

Cheese in the Modern Dietary.—In a very interesting article by Miss Lulu Graves (*Modern Hospital*) attention is drawn to the value of cheese as a nutritious food. Cheese consists essentially of the casein and fat of milk, though the coagulated curd entangles in its meshes small portions of albumin, lactose, and mineral salts. The nature of the cheese depends on the richness of the milk, kind of milk, and amount of pressure used in manufacturing. If pure whole milk is used and clotted with rennet, almost all the food value of the milk is transferred to the cheese. This is the case in making Cheddar cheese; or, as in the

making of Stilton, the proportion of fat is made greater by adding cream; or, in other cases, the cream is removed and a low per cent of fat is left. This is sometimes done in making cottage cheese. The flavor depends on the species of bacteria used during the ripening process; each species produces chemical changes which give characteristic flavors. The ripening process continues for weeks, and in some cases for months, the flavor slowly growing stronger all of the time.

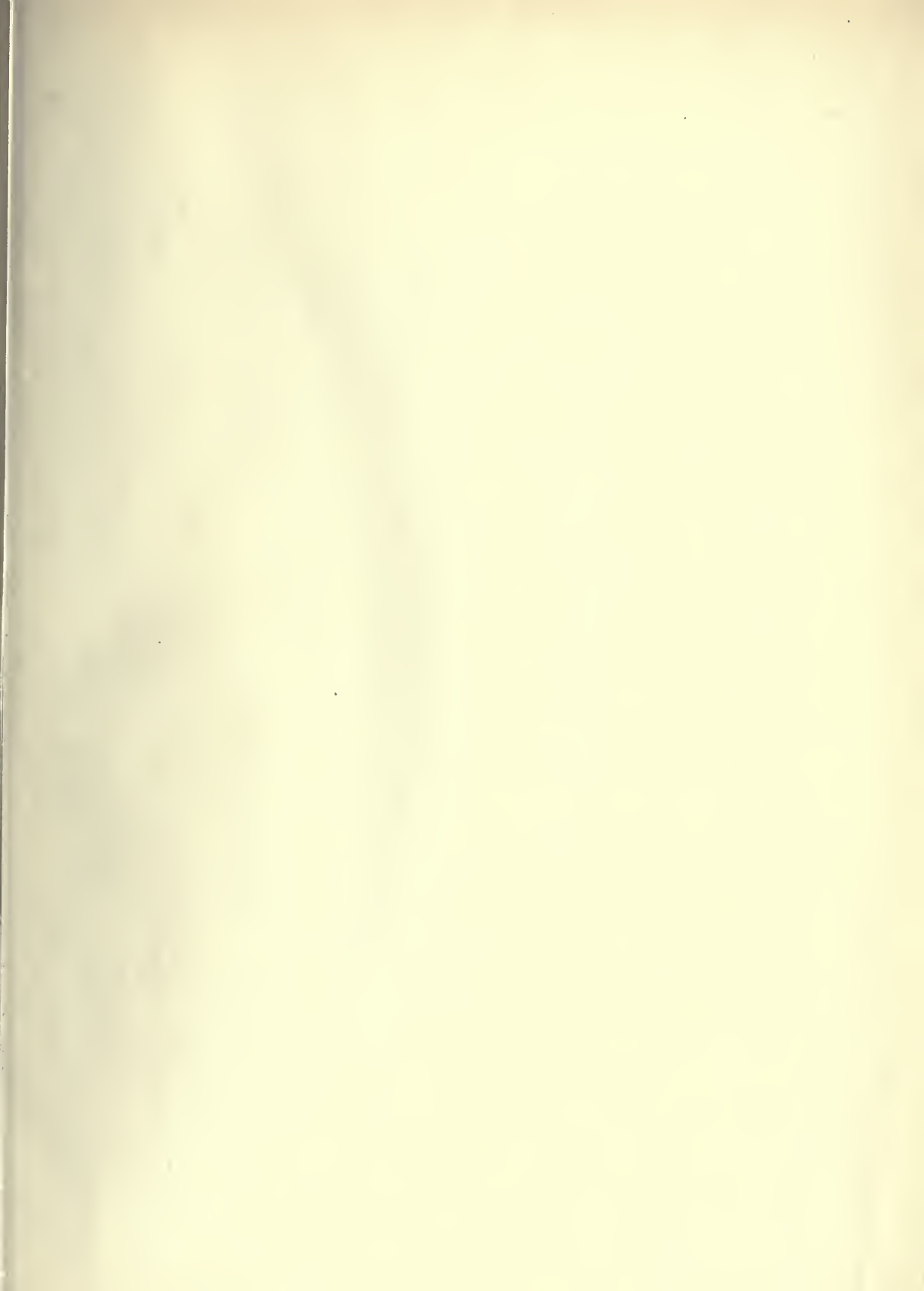
The soft cheeses, Camembert, Stilton, cream, Neufchâtel, etc., should be consumed soon after manufacture. Neufchâtel and cream are similar to cottage cheese, and may be eaten after one day of ripening. Cream cheese has more fat than the other two, but none of them is subject to the curing process. Camembert is a French cheese. An experienced French cheesemaker was secured at the Storr's experiment station in Connecticut, and it is said the cheese being made there is very much the same as the French product in quality and appearance, and is made more scientifically and under more rigid control. This cheese ripens in about thirty days, is kept in a cool place, and a mold develops during curing, which changes the color to a grayish green and makes the cheese soft and creamy.

Edam is the most famous of the Holland cheeses. It is made from a pure culture of slimy bacteria. In Holland it is marketed in about a month, but when we get it in this country it may be several months old.

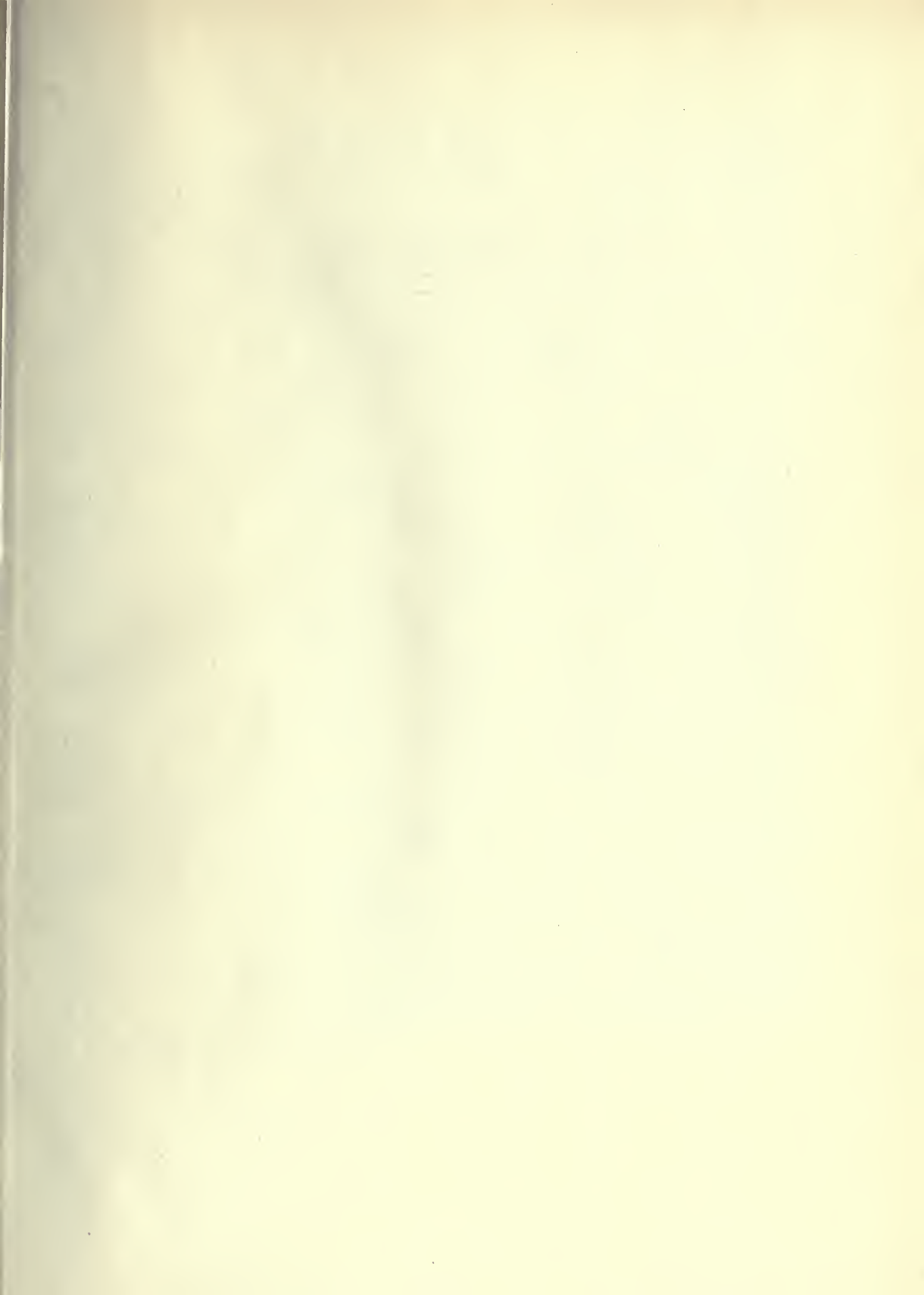
Roquefort is made from goat's milk and ripened by a green mold, has a strongly marked flavor, and is very expensive. Parmesan and its variations, Gruyère and Gorgonzola, are also made from goat's milk. These are the so-called fancy cheeses, and the high price is paid for flavor rather than food value. This is true of many of our foods, but is far more likely to be the case in buying cheese. American cheese contains more nutriment than Parmesan and is half the price. Stilton is about the same food value as American, but twice as expensive.

Cheese eaten for flavor is an expensive food, but, if eaten for food value and proper varieties bought, it is a decidedly inexpensive form of protein and well-ripened cheese is not hard to digest for the average healthy, normal digestion. Because of the large amount of fat, it may cause trouble for delicate digestive organs, unless it is very finely divided. This may be done by grating, by thoroughly chewing, or by mixing with milk and eggs. Another reason for disagreeable effects in the stomach is that fatty acids are formed in small amounts during the process of ripening, and these may prove irritating.

The nutritive value of cheese is very high, and it is helpful in digestion; it has an action similar to that of an enzyme. This is why it is used at the end of a heavy meal, and gives rise to this familiar quotation, "Cheese, thou mighty elf, digesting all things but thyself." It is said that "Americans taste cheese, Europeans eat it."







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